

STATE OF TENNESSEE

Office of the Attorney General



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Reply to:
Consumer Advocate and Protection Division
Post Office Box 20207
Nashville, TN 37202

August 28, 2003

Honorable Deborah Taylor Tate
Chairman
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, Tennessee 37243

IN RE: APPLICATION OF NASHVILLE GAS COMPANY, A DIVISION OF
PIEDMONT NATURAL GAS COMPANY, INC. FOR AN ADJUSTMENT OF ITS
RATES AND CHARGES, FOR APPROVAL OF REVISED TARIFFS AND
APPROVAL OF REVISED SERVICE REGULATIONS.

DOCKET NO. 03-00313

Dear Chairman Tate:

Enclosed is an original and thirteen copies of Consumer Advocate and Protection Division's Responses to Discovery Request by Piedmont Natural Gas Company. Kindly file same in this docket. Copies are being sent to all parties of record. If you have any questions, kindly contact me at (615) 741-8733. Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Joe Shirley".

JOE SHIRLEY

Assistant Attorney General

cc: All Parties of Record

#66649

Response to Request 1 of 39

1. With respect to the testimony and exhibits of Consumer Advocate witnesses Brown, McCormac, Chrysler, and Crocker filed on behalf of the Consumer Advocate in this proceeding, please produce a copy of all workpapers or other documents generated by, reviewed or relied upon by these witnesses in the formulation of such testimony and exhibits or any of the recommendations reflected therein.

See attached.

NASHVILLE GAS COMPANY
Uncollectible Accounts Expense
For The Twelve Months Ending October 31, 2004

Line No.				
1.	Gross Revenues	\$205,103,204	A/ 188,497,051	
	Gas cost decrease (DWM-1a)	<16,686,804>		
2.	Ratio of Net Write-offs to Gross Revenues	0.002755		
	Plus billing error adj. (DR#36/DWM-3)	80,651		
3.	Uncollectible Accounts Expense	\$565,059		
		188,497,051		

Adjusted
x .004534 = 854,646

A/ Excludes all Transportation Sales

NASHVILLE GAS COMPANY
Analysis of Net Write-Offs

Line No.	12 Mos. Ended December	Net Write-Offs	% Gas Cost	Non-Gas Cost Write-Offs	Gross Revenues *	Ratio
		(3)	(4)	(5)	(4)	(5)
1	2000	269,975	56.12%	151,499	139,222,060	0.001088
2	2001	1,267,316	64.50%	817,428	186,240,215	0.004389
3	2002	595,419	54.89%	326,824	144,949,579	0.002255
4		\$2,132,710		\$1,295,750	\$470,411,854	
5	Average	<u>.004534</u>	(2,132,710 / 470,411,854)			0.002755

* Excludes Secondary Market Transactions & Transportation Revenues

w/p DWN-1a

	<u>Now</u>	<u>AS FILED</u>	<u>Change</u>
COG	115,869,340	132,556,144	(16,686,804)
Margin	<u>80,370,100</u>	<u>80,370,098</u>	<u>2</u>
Total Revenues	196,239,440	212,926,242	(16,686,802)

Printed From "Dan-Revs + COG at \$5.60.xls" provided by PNG
to be consistent with revised inventory price out.

Nov 2003	5.6580
Dec 2003	5.8470
Jan 2004	5.9480
Feb 2004	5.8770
Mar 2004	5.7190
Apr 2004	5.1350
May 2004	4.9920
Jun 2004	4.9790
Jul 2004	4.9730
Aug 2004	4.9930
Sep 2004	4.9830
Oct 2004	5.0140

Prices supporting inventory adjustment (MDC-1)

NGC used \$5.60 as assumed weighted average For COG priceout

PIEDMONT NATURAL GAS COMPANY, INC.
COMPUTATION OF AVERAGE ACCUMULATED DEPRECIATION
THIRTEEN MONTHS ENDING OCTOBER 31, 2004 (TENNESSEE)

	Accumulated Depreciation	
Balance @ December 31, 2002	165,580,648	
Allocated Joint Property @ December 31	11,683,175	
Adjusted Balance @ December 31, 2002	177,263,823	
Projected Additions January 2003	1,340,832	
Projected Balance @ January 31, 2003	178,604,655	
Projected Additions February 2003	1,344,999	
Projected Balance @ February 28, 2003	179,949,654	
Projected Additions March 2003	1,349,438	
Projected Balance @ March 31, 2003	181,299,092	
Projected Additions April 2003	1,353,619	
Projected Balance @ April 30, 2003	179,958,274	
Projected Additions May 2003	1,357,950	
Projected Balance @ May 31, 2003	181,316,224	
Projected Additions June 2003	1,361,992	
Projected Balance @ June 30, 2003	182,678,216	
Projected Additions July 2003	1,366,157	
Projected Balance @ July 31, 2003	184,044,373	
Projected Additions August 2003	1,371,554	
Projected Balance @ August 31, 2003	185,415,927	
Projected Additions September 2003	1,376,797	
Projected Balance @ September 30, 2003	186,792,724	
Projected Additions October 2003	1,382,272	
Projected Balance @ October 31, 2003	188,174,996	188,174,996
Projected Additions November 2003	1,387,341	
Projected Balance @ November 30, 2003	189,562,337	189,562,337
Projected Additions December 2003	1,392,586	
Projected Balance @ December 31, 2003	190,954,923	190,954,923
Projected Additions January 2004	1,402,311	
Projected Balance @ January 31, 2004	192,357,234	192,357,234
Projected Additions February 2004	1,406,400	
Projected Balance @ February 28, 2004	193,763,634	193,763,634
Projected Additions March 2004	1,410,865	
Projected Balance @ March 31, 2004	195,174,499	195,174,499
Projected Additions April 2004	1,414,902	
Projected Balance @ April 30, 2004	196,589,401	196,589,401
Projected Additions May 2004	1,419,048	
Projected Balance @ May 31, 2004	198,008,449	198,008,449
Projected Additions June 2004	1,422,949	
Projected Balance @ June 30, 2004	199,431,398	199,431,398
Projected Additions July 2004	1,426,971	
Projected Balance @ July 31, 2004	200,858,369	200,858,369
Projected Additions August 2004	1,432,324	
Projected Balance @ August 30, 2004	202,290,693	202,290,693
Projected Additions September 2004	1,437,412	
Projected Balance @ September 30, 2004	203,728,105	203,728,105
Projected Additions October 2004	1,442,741	
Projected Balance @ October 31, 2004	205,170,846	205,170,846

Thirteen Month Average for Attrition Period

196,620,376

1

Formula error
ADD \$2,694,437

Response to CADD DR#36

W/P DWM-3

NASHVILLE GAS DIVISION
PRO FORMA MARGIN CALCULATIONS

(dekatherms)	12 Mon 12/31/02		12 Mon 10/31/04		4/1/2003 Billing Rates (6)	Adjusted Proforma Margin (7)	Filed Proforma Margin (8)	Increase In Proforma Margin (9)
	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adj Thru Attrition Period (4)				
Rate Schedule								
Commercial 02								
Bills	195,883			4,189	200,072	\$4,401,584	\$4,401,584	\$0
Winter	4,831,095	(72,122)	4,758,973	120,196	4,879,169	\$16,998,536	\$16,934,348	\$64,188
Summer	1,968,323	28,922	1,997,245	47,983	2,045,228	\$6,387,861	\$6,371,398	\$16,463
Total Commercial	<u>6,799,418</u>	<u>(43,199)</u>	<u>6,756,218</u>	<u>168,179</u>	<u>6,924,397</u>	<u>\$ 27,787,981</u>	<u>\$ 27,707,330</u>	<u>\$ 80,651.00</u>

Nashville Gas Company
Docket Number 03-00313
Pension Expense

PEN-1
MHC
1 August 2003

Pension Expense Proposed by Company:	660,272	660,272
Agreed Amount from 1999 Settlement:	<u>583,494</u>	
Test Year Amount:		<u>605,224</u>
Difference:	<u>76,778</u>	<u>55,048</u>
Percentage Increase:	<u>13.16%</u>	<u>9.10%</u>

Conclusion:

The increase in Pension Expense appears reasonable in light of the increase allowed in salaries and wages. However, in computing the pension expense for the attrition year, the Company used an incorrect number for Amortization of Deferred Pension Expense.

The adjustment is computed as follows:

Amount of Amortization of Pension Expense used in original filing for computing attrition year amount of Pension Expense:

436,723 PEN-2

Amount of Amortization of Pension Expense that the Company provided to Consumer Advocate as documentation for this expense:

350,467 PEN -3

Amount of Adjustment:

86,256

Pension Expense Proposed by Company:

660,272

Less Adjustment:

(86,256)

Amount allowed in Rate Case as Pension Expense:

574,016

The Company provided both workpapers (PEN-2 and PEN-3) and orally agreed that the incorrect amount had been used in the computation.

PEN-3

Piedmont Natural Gas Company
Tennessee Operations
Statement 87 Pension Expense
Attrition Period Twelve Months Ending October 31, 2004

Line No.		
1	Unamortized balance in deferred pension expense at October 31, 2003 (a)	\$1,752,333
2	Amortization period - years	<u>5</u>
3	Annual amortization (Line 1 / Line 2)	\$350,467
4	Amount recorded in the test period (b)	<u>203,220</u>
5	Attrition adjustment (line 3 - Line 4)	<u>\$147,247</u>

Note In the order in Docket No. 96-00977, the Authority permitted the Company to establish a deferred asset for the difference between the amount of pension expense allowed in that docket (zero) and the amount of pension expense actually funded. On October 30, 1997, the Company funded the pension trust account in the amount of \$4,022,536, of which the Tennessee

(a)	Balance approved for recovery in Docket No. 99-00994	1,016,093
	Less amortization over five years beginning July 2000 (\$16,935 monthly)	<u>(677,400)</u>
	Projected unamortized balance at October 31, 2003	338,693
	Additional deferral in fiscal 2003:	
	Estimated contribution	5,900,000
	TN % (net plant as of December 31, 2002)	23.96%
	TN portion	
	Unamortized balance at October 31, 2003	<u>1,413,640</u>
		<u>1,752,333</u>
(b)	\$16,935 monthly times 12 months.	

Mar 31, 2003
BLG
Pension

	<u>Non-Utility</u>	<u>Utility</u>	<u>Workpaper Reference</u>
Expense used by Company in preparation of Rate Case:	100,000	300,000	Tab 25; page 50 of 185 Tab 25; page 51 of 185
Amount allocated to Tennessee:		<u>X 23.96%</u>	
Amount used in Rate Case:		<u>71,880</u>	
Most recent quote:			
\$834,000			

The Company has allocated 25% to Non-Utility and 75% to Utility. Therefore, using the new quote, the numbers that should have been used for preparation of the Rate Case are:

	<u>834,000</u>	<u>834,000</u>	(from AA-2)
	<u>X 25%</u>	<u>X 75%</u>	
	208,500	625,500	
Amount allocated to Tennessee:		<u>X 23.96%</u>	
Proper amount to use in Rate Case:		<u>149,870</u>	
Increase in Liability Insurance:		<u>149,870</u>	
		<u>(71,880)</u>	
Increase accepted by Consumer Advocate:		<u>77,990</u>	

AA-2

PIEDMONT NATURAL GAS

Directors & Officers Liability Premium Projections

Limits	Deductible				
	\$250,000	\$500,000	\$1,000,000	\$2,000,000	\$2,500,000
\$10,000,000	N/A	\$325,000	\$300,000	\$285,000	\$275,000
\$15,000,000	N/A	\$450,000	\$435,000	\$415,000	\$400,000
\$20,000,000	N/A	\$600,000	\$555,000	\$530,000	\$510,000
\$25,000,000	N/A	\$715,000	\$670,000	\$645,000	\$625,000
\$30,000,000	N/A	\$834,000	\$771,000	\$746,000	\$726,000
\$40,000,000	N/A	\$1,034,000	\$970,000	\$946,000	\$926,000
\$50,000,000	N/A	\$1,234,000	\$1,171,000	\$1,146,000	\$1,126,000

Employment Practices Liability Premium Projections

Limits	Deductible			
	\$100,000	\$250,000	\$500,000	\$1,000,000
\$10,000,000	N/A	\$150,000	\$142,000	\$135,000
\$20,000,000	N/A	\$227,000	\$262,000	\$250,000
\$30,000,000	N/A	\$387,000	\$367,000	\$355,000
\$35,000,000	N/A	\$447,000	\$427,000	\$415,000

Note: These premiums are projections only based on "best" case scenario and are well below the current averages for a public company with a \$1 Billion market capitalization. Additional factors such as industry group, pending merger, EPL claims history, corporate governance issues will also have a major impact on the underwriters perception of the risk.

Nashville Gas Company
Docket No. 03-00313
Odorant Expense

A-1
MHC
30 July 2003

For the 12 Months Ended:

December 2002	58,628
December 2001	35,240
December 2000	36,013
December 1999	<u>45,065</u>

Total:	174,946
Divided by:	<u>4</u>

Average:	<u><u>43,737</u></u>
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The amount allowed for this expense will be the average as computed above,
since the Company has not provided any additional information on this line item.

C

WEST'S TENNESSEE CODE ANNOTATED
TITLE 67. TAXES AND LICENSES
CHAPTER 4. PRIVILEGE AND EXCISE TAXES
PART 20--EXCISE TAX LAW
§ 67-4-2007. Taxable persons and entities

(a) All persons, except those having not-for-profit status, doing business in Tennessee, shall, without exception other than as provided herein, pay to the commissioner, annually, an excise tax, in addition to all other taxes, equal to six and one-half percent (6.5%) of the net earnings for the next preceding fiscal year for business done in this state during that fiscal year. Notwithstanding the fact that a person is not-for-profit, such person shall be subject to excise tax on all of its Tennessee net earnings to the extent such earnings constitute unrelated business taxable income as defined in § 512 of the Internal Revenue Code or are otherwise subject to income taxes under Subtitle A of such code. Notwithstanding the fact that a person is otherwise exempted from the excise tax, such person shall be subject to excise tax on all of its Tennessee net earnings that are attributable to any activities unrelated to and outside the scope of the activities that give it an exemption status.

(b) Every such person, now or hereafter doing business within this state, shall, as a recompense for the protection of its local activities and as compensation for the benefits it receives from doing business in Tennessee, pay the tax imposed by this part. A person doing business in Tennessee without incorporating, domesticating, qualifying or otherwise registering in Tennessee, or doing business in Tennessee while its charter, domestication, qualification or other registration is forfeited, revoked or suspended, is not relieved from filing a return and paying the excise tax levied by this part for each tax year that such person does business in Tennessee.

(c) The tax imposed by this part shall apply to taxpayers whose business is being conducted by a receivership or trusteeship appointed by any court of competent jurisdiction, and shall continue to accrue until such time as the taxpayer has been actually and legally dissolved or withdrawn from this state.

(d) For purposes of the excise tax levied by this part, a business entity shall be classified as a corporation, partnership, or other type business entity, consistent with the way the entity is classified for federal income tax purposes, and subject to tax in accordance with this part. Notwithstanding any provision of law to the contrary, entities that are disregarded for federal income tax purposes, except for limited liability companies whose single member is a corporation, shall not be disregarded for Tennessee excise tax purposes.

(e) Except for unitary groups of financial institutions and business entities that have been required or permitted to file excise tax returns on a combined, consolidated or separate accounting basis under § 67-4-2014, each taxpayer shall be considered a separate and single business entity for Tennessee excise tax purposes and shall file its Tennessee excise tax return on a separate entity basis reflecting only its own business activities even though it may have filed a consolidated federal income tax return with other members of its unitary group. The federal taxable income computed on a separate entity basis excise tax return and subject to adjustments set forth in § 67-4-2006 shall be the same federal taxable income that would have been computed on the taxpayer's federal return if it had been filed on a separate entity basis rather than a consolidated basis.

1999 Pub.Acts, c. 406, § 3, eff. June 17, 1999; 2000 Pub.Acts, c. 982, §§ 15 to 17, eff. June 28, 2000.
Amended by 2002 Pub.Acts, c. 856, § 3(c), eff. July 15, 2002.

<General Materials (GM) - References, Annotations, or Tables>

HISTORICAL AND STATUTORY NOTES

1999 Pub.Acts, c. 406, § 19, provides:

Nashville Gas Company
Docket Number 03-00313
Outside Services Expense

U-1
MHC
22 July 2003

Outside Services Expense Proposed by Company:	1,850,027	1,850,027
Agreed Amount from 1999 Settlement:	<u>2,822,719</u>	
Test Year Amount:		<u>1,784,070</u>
Difference:	<u>(972,692)</u>	<u>65,957</u>
Percentage Increase:	<u>-34.46%</u>	<u>3.70%</u>

Conclusion:

Payments made to Mr. John H. Maxheim, serving in his capacity as a "consultant" were disallowed for ratemaking purposes. He is engaged to provide "advice and assistance to the Chief Executive Officer and the Board of Directors on a variety of matters." In light of recent events and the public outcry against overcompensation of CEO's, it appears that the payments to Mr. Maxheim may not be prudent, and should definitely not be included in ratemaking.

Amount Allowed:	<u>1,801,699</u>
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Nashville Gas Company
Docket Number 03-00313
Outside Services Expense

U-2
MHC
22 July 2003

It appears that Mr. John H. Maxheim received \$409,594 (U-3, c and e), for services rendered to the company as a consultant. Having previously served as CEO, his services were undoubtedly of great value to the company, but this amount appears excessive and does not seem prudent on the company's part. Therefore, payments to Mr. Maxheim should be disallowed in computing rates for Tennessee consumers.

Amount paid in Fiscal 2001:	209,441
Months in year:	<u>12</u>
Approximate amount paid per month:	17,453
Months of Fiscal 2001 in Test Year:	<u>2</u>
Amount disallowed from Fiscal 2001:	<u><u>34,907</u></u>

Amount paid in Fiscal 2002:	200,153
Months in year:	<u>12</u>
Approximate amount paid per month:	16,679
Months of Fiscal 2002 in Test Year:	<u>10</u>
Amount disallowed from Fiscal 2002:	<u><u>166,794</u></u>

Amount disallowed from Fiscal 2001:	34,907
Amount disallowed from Fiscal 2002:	166,794
Total amount disallowed:	<u>201,701</u>
Percentage allocated to Tennessee:	<u>23.96%</u>
Total amount disallowed for ratemaking purposes:	<u><u>48,328</u></u>

Amount proposed by company: (<i>Outside Services P. 49</i>)	1,850,027
Amount disallowed for Tennessee ratemaking:	<u>(48,328)</u>
Total amount allowed:	<u><u>1,801,699</u></u>

U-5
MHC
07/22/03

**FIRST DISCOVERY REQUEST INTERROGATORIES
AND REQUESTS TO PRODUCE TO NASHVILLE GAS COMPANY
BY THE CONSUMER ADVOCATE AND PROTECTION DIVISION
OF THE OFFICE OF THE ATTORNEY GENERAL
DOCKET NO. 03-00313
JULY 8, 2003**

DISCOVERY REQUEST NO. 15:

Question Number 27 asked for a listing of outside professional services. Please provide detail for the following:

- (a) ACS Outsourcing Solutions - \$3,028,757.88 (account 92330, page 1, A/P Transactions, fiscal 2001);
- (b) Headstrong - \$167,333.40 (account 92330, page 1, A/P Transactions, fiscal 2001);
- (c) John H. Maxheim - \$209,441.26 (account 92330, page 1, A/P Transactions, fiscal 2001);
- (d) Williams, Roberts, Young Inc. - \$347,993.39 (account 92330, page 2, A/P Transactions, fiscal 2001);
- (e) John H. Maxheim - \$200,152.78 (account 92330, page 2, A/P Transactions, fiscal 2002);
- (f) Keane, Inc. - \$97,050.00 (account 92330, page 2, A/P Transactions, fiscal 2002); and
- (g) Sungard Recovery Services, Inc. - \$107,572.00 (account 92330, page 2, A/P Transactions, fiscal 2002).

RESPONSE:

- a. **ACS Outsourcing Solutions** manages Piedmont's mainframe data center at the ACS Data Center in Charlotte, NC. They manage the mainframe hardware and software, provide technical support for system software maintenance and upgrades, and provide Computer Operations support to run Piedmont's business applications including the Customer Information System and Materials Management System.
- b. **Headstrong** is an IT consulting firm that Piedmont engaged to develop an E-Business strategy and to assist with development of business cases for E-Business initiatives.
- c. **John H. Maxheim**, who formerly served as Chief Executive Officer of the Company, has an agreement with the Company to provide advice and assistance to the Chief Executive Officer and the Board of Directors on a variety of matters. This agreement was effective March 1, 2000 and ended February 28, 2003. Mr. Maxheim received annual compensation of \$195,000, reimbursement of reasonable travel and other out-of-pocket expenses incurred in connection with his services. On his retirement as CEO, Ware F. Schiefer, replaced Mr. Maxheim in the role as advisor to the current CEO and Board of Directors. Mr. Schiefer's annual compensation is \$200,000 plus reimbursement of reasonable travel and other out-of-pocket expenses. His contract became effective on March 1, 2003 and expires on February 28, 2004 and may be extended under the terms of the agreement.
- d. **Williams, Roberts, Young, Inc.** is an IT consulting firm providing systems development resources. The firm provides resources to backfill vacant positions and supplemental resources to address peak workloads.
- e. **John H. Maxheim** -see c. above.
- f. **Keane, Inc.** is an IT consulting firm providing project management and systems development resources. The firm provides resources to backfill vacant positions and supplemental resources to address peak workloads.
- g. **Sungard Recovery Services** provides disaster recovery hot sites for Piedmont's computing facilities. In the event of a disaster that damages Data Center facilities at the Corporate Office or at the ACS Data Center, Piedmont will restore systems at a Sungard site to maintain business continuity. The contract includes provisions for an annual disaster recovery test for the ACS and Corporate Office Data Center environments.

Odorant Expense

12 Mos. Ended

Dec. 2002 58,628

Dec. 2001 35,240

Dec. 2000 36,013

Dec. 1999 45,065**Avg 43,737**

MDC-1

NASHVILLE GAS Rate Case
Docket 03-00313
Gas Inventory - (Worksheet To Determine Cost Per Dth) - Revised Projection *

MDC - 1
03 - 00313

Date	TGP- Mkt	Cost/ Dth	FSS	Cost/ Dth	LNG	Cost/ Dth	CNG	Cost/ Dth	Hattiesburg	Cost/ Dth	Total	Cost/ Dth
December, 2001	\$13,140,596.43	\$4.76	\$2,002,740.95	\$4.10	\$3,260,390.90	\$3.18	\$1,167,452.06	\$4.43	\$1,167,452.06	\$3.27	\$20,738,648.87	\$4.24
January, 2002	11,580,128.10	4.54	1,642,153.04	4.14	3,209,296.77	3.18	900,679.08	4.44	880,272.60	2.20	18,212,545.89	4.00
February, 2002	5,220,840.21	4.53	1,006,929.12	4.15	3,120,280.05	3.18	359,895.53	4.45	1,049,014.62	3.03	10,756,975.83	3.83
March, 2002	5,866,814.09	3.81	540,299.37	4.15	2,921,887.13	3.18	331,358.83	4.45	686,532.92	3.04	10,346,907.93	3.58
April, 2002	5,740,821.28	3.78	540,299.39	4.15	2,882,766.55	3.18	331,358.83	4.45	686,532.92	3.04	10,181,794.53	3.57
May, 2002	9,905,733.34	3.59	973,352.37	3.86	2,844,249.73	3.18	548,614.99	4.07	686,532.92	3.04	14,958,498.04	3.50
June, 2002	10,472,811.93	3.57	1,405,755.51	3.75	2,805,717.02	3.18	749,476.71	3.94	749,476.71	3.15	16,183,252.32	3.51
July, 2002	9,887,326.08	3.58	1,825,654.91	3.67	3,201,507.58	3.20	893,553.65	3.86	543,290.09	3.06	16,351,346.62	3.50
August, 2002	9,915,061.10	3.57	2,153,528.56	3.47	3,162,832.36	3.21	1,021,254.71	3.76	409,441.90	3.07	16,661,384.97	3.48
September, 2002	9,859,368.01	3.57	2,184,766.96	3.57	3,126,832.36	3.21	1,157,330.97	3.73	343,432.19	3.07	16,717,744.57	3.49
October, 2002	9,480,564.27	3.57	2,184,766.96	3.57	3,386,827.02	3.25	1,314,868.62	3.76	343,432.19	3.07	16,710,473.21	3.50
November, 2002	11,276,396.45	3.70	2,039,012.94	3.57	3,433,037.15	3.27	1,314,868.62	3.76	720,957.50	3.58	18,784,286.96	3.60
December, 2002	9,052,487.52	3.73	1,455,276.60	3.58	3,380,627.84	3.27	895,473.01	3.76	720,957.50	3.58	15,504,836.81	3.60
13 Month Avg.	\$9,338,380.68	\$3.84	\$1,534,964.36	\$3.74	\$3,133,500.37	\$3.20	\$845,091.20	\$3.96	\$691,332.78	\$3.04	\$15,543,284.13	\$3.65
Oct., 2003	\$19,142,750.26	\$5.39	\$3,336,033.25	\$5.45	\$5,252,207.24	\$5.00	\$2,023,135.53	\$5.78	\$1,565,706.10	\$5.43	\$31,319,832.38	\$5.35
Nov., 2003	19,348,878.41	5.41	3,235,438.66	5.47	5,252,207.24	5.00	2,023,135.53	5.78	1,723,228.60	5.49	31,582,888.44	5.37
Dec., 2003	16,100,605.59	5.41	2,415,468.40	5.47	4,251,787.24	5.00	1,705,214.23	5.78	1,607,668.60	5.57	26,080,744.06	5.38
Jan., 2004	10,145,438.76	5.41	1,595,498.13	5.47	2,250,947.24	5.00	1,011,567.77	5.78	1,320,334.10	5.65	16,323,786.00	5.40
Feb., 2004	4,190,271.93	5.41	775,527.87	5.47	1,250,527.24	5.00	526,015.24	5.78	816,611.60	5.69	7,558,953.88	5.40
Mar., 2004	3,133,920.05	5.46	228,881.03	5.47	1,250,527.24	5.00	92,486.20	5.78	447,363.60	5.69	5,153,178.12	5.37
Apr., 2004	4,558,183.26	5.36	699,385.51	5.30	1,507,277.24	5.02	92,486.20	5.78	325,117.60	5.55	7,182,449.81	5.29
May, 2004	7,097,110.40	5.26	1,309,444.82	5.20	2,256,077.24	5.01	92,486.20	5.78	269,644.60	5.55	11,024,763.26	5.21
Jun., 2004	9,629,437.54	5.21	1,917,896.13	5.16	3,002,927.24	5.00	738,247.29	5.24	391,893.60	5.32	15,680,401.80	5.16
Jul., 2004	12,664,570.11	5.17	2,525,615.44	5.13	3,748,877.24	5.00	1,538,030.04	5.20	742,453.60	5.17	21,219,546.43	5.14
Aug., 2004	15,203,997.25	5.15	3,034,098.20	5.13	4,497,827.24	5.00	1,817,776.43	5.19	716,603.60	5.17	25,270,302.72	5.13
Sep., 2004	15,710,872.68	5.15	3,135,590.75	5.12	5,245,277.24	5.00	1,817,776.43	5.19	1,090,746.10	5.11	27,000,263.20	5.12
Oct., 2004	18,260,949.82	5.14	3,135,590.75	5.12	5,245,277.24	5.00	1,817,776.43	5.19	1,468,463.60	5.09	29,928,057.84	5.12
13 Month Avg.	\$11,937,460.47	\$5.28	\$2,103,420.69	\$5.27	\$3,462,441.86	\$5.00	\$1,176,625.66	\$5.47	\$960,448.87	\$5.40	\$19,640,397.53	\$5.25
Portion to TN	100%		100%		100%		100%		50%			
Portion to Other	\$0.00		\$0.00		\$0.00		\$0.00		\$480,224.43		\$480,224.43	
Net TN	\$11,937,460.47		\$2,103,420.69		\$3,462,441.86		\$1,176,625.66		\$480,224.43		\$19,160,173.10	

* Data Source: Worksheet received from Bill Morris (7/24/03) as prepared by Ann Boggs

PIEDMONT NATURAL GAS COMPANY, INC.

NASHVILLE GAS DIVISION

INVENTORY - RATE CASE (2003)

G:\GasAccounting\BOGGSAN\WORKSHTS\TNREGACT\TNRATE\INVTN2002 Adjusted for CA data request.XLS\SUMMARY

Revised

WC-5

See P. 107 of 18

DATE	TGP-MKT	FSS	LNG	CNG	HATTIESBURG	TOTAL
Oct 2003	19,142,750.26	3,336,033.25	5,252,207.24	2,023,135.53	1,565,706.10	31,319,832.38
Nov 2003	19,348,878.41	3,235,438.66	5,252,207.24	2,023,135.53	1,723,228.60	31,582,888.43
Dec 2003	16,100,605.59	2,415,468.40	4,251,787.24	1,705,214.23	1,607,668.60	26,080,744.06
Jan 2004	10,145,438.76	1,595,498.13	2,250,947.24	1,011,567.77	1,320,334.10	16,323,786.00
Feb 2004	4,190,271.93	775,527.87	1,250,527.24	526,015.24	816,611.60	7,558,953.88
Mar 2004	3,133,920.05	228,881.03	1,250,527.24	92,486.20	447,363.60	5,153,178.12
Apr 2004	4,558,183.26	699,385.51	1,507,277.24	92,486.20	325,117.60	7,182,449.81
May 2004	7,097,110.40	1,309,444.82	2,256,077.24	92,486.20	269,644.60	11,024,763.26
Jun 2004	9,629,437.54	1,917,896.13	3,002,927.24	738,247.29	391,893.60	15,680,401.80
Jul 2004	12,664,570.11	2,525,615.44	3,748,877.24	1,538,030.04	742,453.60	21,219,546.43
Aug 2004	15,203,997.25	3,034,098.20	4,497,827.24	1,817,776.43	716,603.60	25,270,302.72
Sep 2004	15,710,872.68	3,135,590.75	5,245,277.24	1,817,776.43	1,090,746.10	27,000,263.20
Oct 2004	18,260,949.82	3,135,590.75	5,245,277.24	1,817,776.43	1,468,463.60	29,928,057.84
13 MONTH AVG	11,937,460.47	2,103,420.69	3,462,441.86	1,176,625.65	960,448.87	19,640,397.54
PORTION TO TN	100.00%	100.00%	100.00%	100.00%	50.00%	
	<u>11,937,460.47</u>	<u>2,103,420.69</u>	<u>3,462,441.86</u>	<u>1,176,625.65</u>	<u>480,224.44</u>	<u>19,160,173.11</u>

Volumes:

DATE	TGP-MKT	FSS	LNG	CNG	HATTIESBURG	TOTAL
Oct 2003	3,550,000	611,870	1,050,000	350,000	288,608	5,850,478
Nov 2003	3,574,000	591,870	1,050,000	350,000	313,608	5,879,478
Dec 2003	2,974,000	441,870	850,000	295,000	288,608	4,849,478
Jan 2004	1,874,000	291,870	450,000	175,000	233,608	3,024,478
Feb 2004	774,000	141,870	250,000	91,000	143,608	1,400,478
Mar 2004	574,000	41,870	250,000	16,000	78,608	960,478
Apr 2004	850,000	131,870	300,000	16,000	58,608	1,356,478
May 2004	1,350,000	251,870	450,000	16,000	48,608	2,116,478
Jun 2004	1,850,000	371,870	600,000	141,000	73,608	3,036,478
Jul 2004	2,450,000	491,870	750,000	296,000	143,608	4,131,478
Aug 2004	2,950,000	591,870	900,000	350,000	138,608	4,930,478
Sep 2004	3,050,000	611,870	1,050,000	350,000	213,608	5,275,478
Oct 2004	3,550,000	611,870	1,050,000	350,000	288,608	5,850,478
13 MONTH AVG	2,259,231	398,793	692,308	215,077	177,839	3,743,247
PORTION TO TN	100.00%	100.00%	100.00%	100.00%	50.00%	
	<u>2,259,231</u>	<u>398,793</u>	<u>692,308</u>	<u>215,077</u>	<u>88,919</u>	<u>3,654,328</u>
	\$ 5.28386	\$ 5.27447	\$ 5.00130	\$ 5.47072	\$ 5.40067	\$ 5.24315

NASHVILLE GAS RATE CASE
Docket 03-00313
Gas Inventory - (Worksheet To Determine Cost Per Dth) - Original Projection

MDC - 2
03 - 00313

Date	TGP- Mkt	Cost/ Dth	FSS	Cost/ Dth	LNG	Cost/ Dth	CNG	Cost/ Dth	Hattiesburg	Cost/ Dth	Total	Cost/ Dth
December, 2001	\$13,140,596.43	\$4.76	\$2,002,740.95	\$4.10	\$3,260,390.90	\$3.18	\$1,167,452.06	\$4.43	\$1,167,452.06	\$3.27	\$20,738,648.87	\$4.24
January, 2002	11,580,128.10	4.54	1,642,153.04	4.14	3,209,296.77	3.18	900,679.08	4.44	880,272.60	2.20	18,212,545.89	4.00
February, 2002	5,220,840.21	4.53	1,006,929.12	4.15	3,120,280.05	3.18	359,895.53	4.45	1,049,014.62	3.03	10,756,975.83	3.83
March, 2002	5,866,814.09	3.81	540,299.37	4.15	2,921,887.13	3.18	331,358.83	4.45	686,532.92	3.04	10,346,907.93	3.58
April, 2002	5,740,821.28	3.78	540,299.39	4.15	2,882,766.55	3.18	331,358.83	4.45	686,532.92	3.04	10,181,794.53	3.57
May, 2002	9,905,733.34	3.59	973,352.37	3.86	2,844,249.73	3.18	548,614.99	4.07	686,532.92	3.04	14,958,498.04	3.50
June, 2002	10,472,811.93	3.57	1,405,755.51	3.75	2,805,717.02	3.18	749,476.71	3.94	749,476.71	3.15	16,183,252.32	3.51
July, 2002	9,887,326.08	3.58	1,825,654.91	3.67	3,201,507.58	3.20	893,553.65	3.86	543,290.09	3.06	16,351,346.62	3.50
August, 2002	9,915,061.10	3.57	2,153,528.56	3.47	3,162,084.69	3.21	1,021,254.71	3.76	409,441.90	3.07	16,661,384.97	3.48
September, 2002	9,859,368.01	3.57	2,184,766.96	3.57	3,126,832.36	3.21	1,157,330.97	3.73	343,432.19	3.07	16,671,744.57	3.49
October, 2002	9,480,564.27	3.57	2,184,766.96	3.57	3,386,827.02	3.25	1,314,868.62	3.76	343,432.19	3.07	16,710,473.21	3.50
November, 2002	11,276,396.45	3.70	2,039,012.94	3.57	3,433,037.15	3.27	1,314,868.62	3.76	720,957.50	3.58	18,784,266.96	3.60
December, 2002	9,052,487.52	3.73	1,455,276.60	3.58	3,380,627.84	3.27	895,473.01	3.76	720,957.50	3.58	15,504,836.81	3.60
13 Month Avg.	\$9,338,380.68	\$3.84	\$1,534,964.36	\$3.74	\$3,133,500.37	\$3.20	\$845,091.20	\$3.96	\$691,332.78	\$3.04	\$15,543,284.13	\$3.65
Oct., 2003	\$22,748,555.01	\$6.41	\$3,973,362.25	\$6.49	\$6,161,342.24	\$5.87	\$2,372,974.43	\$6.78	\$1,890,110.60	\$6.55	\$37,146,370.08	\$6.35
Nov., 2003	22,983,829.18	6.43	3,849,415.15	6.50	6,161,342.24	5.87	2,372,974.43	6.78	2,067,985.60	6.59	37,435,572.18	6.37
Dec., 2003	19,125,324.00	6.43	2,873,842.35	6.50	4,987,762.24	5.87	2,000,078.45	6.78	1,910,385.60	6.62	30,897,418.22	6.37
Jan., 2004	12,051,397.84	6.43	1,898,269.55	6.50	2,640,602.24	5.87	1,186,487.22	6.78	1,551,118.60	6.64	19,327,901.03	6.39
Feb., 2004	4,977,471.68	6.43	922,696.75	6.50	1,467,002.24	5.87	616,973.35	6.78	955,110.10	6.65	8,939,279.70	6.38
Mar., 2004	3,715,032.50	6.47	272,314.89	6.50	1,467,002.24	5.87	108,478.83	6.78	523,184.10	6.66	6,086,038.18	6.34
Apr., 2004	5,613,049.36	6.60	876,046.37	6.64	1,801,042.24	6.00	108,478.83	6.78	391,186.10	6.67	8,789,828.93	6.48
May, 2004	9,009,126.50	6.67	1,681,021.68	6.67	2,803,162.24	6.23	108,478.83	6.78	324,440.10	6.67	13,926,255.71	6.58
Jun., 2004	12,405,203.64	6.71	2,485,996.99	6.69	3,805,282.24	6.34	974,039.92	6.91	492,839.10	6.70	20,163,388.53	6.64
Jul., 2004	16,480,486.21	6.73	3,290,972.30	6.69	4,807,402.24	6.41	2,047,335.67	6.92	963,547.10	6.71	27,589,780.26	6.68
Aug., 2004	19,876,573.35	6.74	3,961,785.06	6.69	5,809,522.24	6.46	2,421,258.06	6.92	929,999.10	6.71	32,999,164.61	6.69
Sep., 2004	20,555,788.78	6.74	4,095,947.61	6.69	6,811,642.24	6.49	2,421,258.06	6.92	1,434,544.10	6.72	35,319,207.63	6.69
Oct., 2004	23,951,865.92	6.75	4,095,947.61	6.69	6,811,642.24	6.49	2,421,258.06	6.92	1,939,021.60	6.72	39,219,762.28	6.70
13 Month Avg. Portion to TN Portion to Other	\$14,884,131.84 100% \$0.00	\$6.59	\$2,636,739.89 100% \$0.00	\$6.61	\$4,271,903.78 100% \$0.00	\$6.17	\$1,473,851.86 100% \$0.00	\$6.85	\$1,182,574.75 50% \$591,287.38	\$6.65	\$24,449,202.12 \$591,287.38	\$6.53
Net TN	\$14,884,131.84		\$2,636,739.89		\$4,271,903.78		\$1,473,851.86		\$591,287.38		\$23,857,914.75	

NASHVILLE GAS Rate Case
Docket 03-00313
Gas Inventory - Volumes

MDC - 3
03 - 00313

Date	TGP- Mkt	FSS	LNG	CNG	Hattiesburg	Total
December, 2001	2,759,311	488,860	1,026,024	263,360	356,758	4,894,313
January, 2002	2,548,426	396,602	1,009,945	203,000	399,845	4,557,818
February, 2002	1,152,985	242,839	981,932	80,920	346,398	2,805,074
March, 2002	1,541,449	130,080	919,499	74,480	226,132	2,891,640
April, 2002	1,517,615	130,080	907,188	74,480	226,132	2,855,495
May, 2002	2,762,186	252,436	895,067	134,744	226,132	4,270,565
June, 2002	2,929,903	374,810	882,941	190,292	238,082	4,616,028
July, 2002	2,763,169	497,184	999,587	231,429	177,342	4,668,711
August, 2002	2,776,975	620,766	986,013	271,578	133,335	4,788,667
September, 2002	2,763,286	611,870	973,875	310,398	111,695	4,771,124
October, 2002	2,654,436	611,870	1,043,128	350,000	111,695	4,771,129
November, 2002	3,047,814	570,886	1,050,886	350,000	201,123	5,220,709
December, 2002	2,425,251	406,950	1,034,843	238,016	201,123	4,306,183
13 Month Avg.	2,434,062	410,403	977,764	213,284	227,369	4,262,881
Oct., 2003	3,550,000	611,870	1,050,000	350,000	288,608	5,850,478
Nov., 2003	3,574,000	591,870	1,050,000	350,000	313,608	5,879,478
Dec., 2003	2,974,000	441,870	850,000	295,000	288,608	4,849,478
Jan., 2004	1,874,000	291,870	450,000	175,000	233,608	3,024,478
Feb., 2004	774,000	141,870	250,000	91,000	143,608	1,400,478
Mar., 2004	574,000	41,870	250,000	16,000	78,608	960,478
Apr., 2004	850,000	131,870	300,000	16,000	58,608	1,356,478
May, 2004	1,350,000	251,870	450,000	16,000	48,608	2,116,478
Jun., 2004	1,850,000	371,870	600,000	141,000	73,608	3,036,478
Jul., 2004	2,450,000	491,870	750,000	296,000	143,608	4,131,478
Aug., 2004	2,950,000	591,870	900,000	350,000	138,608	4,930,478
Sep., 2004	3,050,000	611,870	1,050,000	350,000	213,608	5,275,478
Oct., 2004	3,550,000	611,870	1,050,000	350,000	288,608	5,850,478
13 Month Avg.	2,259,231	398,793	692,308	215,077	177,839	3,743,247

Response to Request 2 of 39

2. With respect to the Exhibit CAPD filed on behalf of the Consumer Advocate in this proceeding, please produce a copy of all workpapers or other documents generated by, reviewed or relied upon by the Consumer Advocate staff in the formulation of such exhibit or any of the recommendations or calculations reflected therein.

See response to Item No. 1.

Response to Request 3 of 39

3. With respect to the Exhibit CAPD filed on behalf of the Consumer Advocate in this proceeding, Schedule 4, line 24, identify the derivation, basis and justification for utilization of a 45 day lag factor for common equity included therein.

In Dockets 96-00977 and 97-00982 the CAPD attempted to adjust the required return on equity funds to recognize that financial growth is achieved through monthly compounding rather than annual compounding. The TRA ruled in both dockets that such an adjustment would be inappropriate. Although we continue to believe that such an adjustment is appropriate, we have not made that argument in this case. However, to be consistent with the TRA's rulings in those dockets that the recognition of monthly compounding is inappropriate, we have adjusted the lag days to reflect the actual cash flow of dollars from the company to its investors. Dividends are paid every 90 days, therefore, the average payment lag is 45 days. Although we agree that the assumption of 0 lag days would be appropriate in theory and has been the practice in recent years in lead-lag studies accepted by the TRA, the use of 0 days in this calculation assumes monthly compounding. This assumption is inconsistent with the TRA's ruling in dockets 96-00977 and 97-00982 that monthly compounding is inappropriate.

Response to Request 4 of 39

4. With respect to Joint Exhibit CAPD filed on behalf of the Consumer Advocate in this proceeding, Schedule 4, line 24:

- (a) identify by caption and docket number each and every proceeding before the Tennessee Regulatory Authority (or its predecessor) during the last ten (10) years in which the Consumer Advocate or any other party known to the Consumer Advocate has recommended or utilized a Working Capital Expense lag factor for common equity of greater than zero;
- (b) provide a copy of any testimony filed in such proceedings incorporating or referencing such recommendation or utilization; and
- (c) identify by state, caption and docket number each and every proceeding before any state public service commission or authority of which the Consumer Advocate is aware wherein the use of a Working Capital Expense lag factor for common equity of greater than zero was adopted.

See response to Item No. 3.

Response to Request 5 of 39

5. Identify each and every proceeding (by caption and docket number) within the last ten (10) years before the Tennessee Regulatory Authority or its predecessor in which Consumer Advocate witness Brown, or any other witness sponsored by the Consumer Advocate, has recommended or supported the use of an equity, long-term debt, or short-term debt component of capital structure derived from an average of the equity, long-term debt, or short-term debt components of one or more comparable companies.

Answer:

The Consumer Advocate objects to Nashville Gas Company's request on the ground that it is contrary to the parties' agreement to streamline discovery by limiting the scope of background information and prior testimony of expert witnesses.

Without waiving the objection, the Consumer Advocate provides the following response:

Petition of Tennessee- American Water Company to Change and Increase Certain Rates and Charges So as to Permit it to Earn a Fair and Adequate Rate of Return on its Property Used and Useful in Furnishing Water Service to its Customers-

TENNESSEE REGULATORY AUTHORITY DOCKET NO. 03-00118

Response to Request 6 of 39

6. Please provide a copy of any testimony filed by or on behalf of the Consumer Advocate in any proceeding identified in response to Discovery Request No. 8.

Answer:

The Consumer Advocate objects to Nashville Gas Company's request on the ground that it is contrary to the parties' agreement to streamline discovery by limiting the scope of background information and prior testimony of expert witnesses.

Without waiving the objection, the Consumer Advocate provides the following response:

None. If you mean request no. 5, Mr. Grimes was the petitioner's attorney in that case and a copy of that testimony was provided to his office. Copies are also available on the TRA's Internet website:

www.state.tn.us/tra/orders/2003/0300118ca.pdf
www.state.tn.us/tra/orders/2003/0300118bm.pdf

Response to Request 7 of 39

7. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 7, lines 21 and 22, please explain, in detail, every reason why, in Mr. Brown's view, "Piedmont's proposed capital structure is not verified" and provide a copy of each and every document, treatise or financial accounting standard upon which Mr. Brown relied in reaching such conclusion.

Answer:

Dr. Brown's Schedules 3, 4, 5, 6 and 7 are the evidence that "Piedmont's proposed capital structure is not verified."

Schedules 3, 4 and 5 use data from the United States Securities and Exchange Commission's data base which is available to the public.

The SEC's files for each comparable company are available at:

AGL -

<http://www.sec.gov/Archives/edgar/data/1004155/000100415503000046/exhibit13.htm>

Atmos -

<http://www.sec.gov/Archives/edgar/data/731802/000095013402014920/0000950134-02-014920.txt>

Peoples -

<http://www.sec.gov/Archives/edgar/data/77385/000007738502000054/form10k.htm>

NICOR -

<http://www.sec.gov/Archives/edgar/data/72020/000095013703001832/c75779e10vk.htm>

NJR -

<http://www.sec.gov/Archives/edgar/data/356309/000095012302012107/y66677exv13w1.txt>

NWN -

<http://www.sec.gov/Archives/edgar/data/73020/000095012003000141/form10k.txt>

WGL -

<http://www.sec.gov/Archives/edgar/data/1103601/000095013302004208/w66936e10vk.htm>

Response to Request 8 of 39

8. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 7, lines 37 and 38, please provide a copy of the documentation from the Federal Reserve Board utilized and/or relied upon by Mr. Brown in reaching his conclusions regarding the proper cost of short-term debt to be utilized in this case.

Answer:

The documentation appears in Dr. Brown's Schedule 8.

Short-term rates on commercial paper can be obtained from the Federal Reserve Board's online data base, which is available to the public.

Schedule 8's data on 1 month, 2 month and 3 month commercial paper offered directly through corporations are available at:

<http://www.federalreserve.gov/releases/h15/data/m/cp1m.txt>
<http://www.federalreserve.gov/releases/h15/data/m/cp2m.txt>
<http://www.federalreserve.gov/releases/h15/data/m/cp3m.txt>

Schedule 8's data on 1 month, 2 month and 3 month commercial paper offered through financial houses are available at:

<http://www.federalreserve.gov/releases/h15/data/m/fp1m.txt>
<http://www.federalreserve.gov/releases/h15/data/m/fp2m.txt>
<http://www.federalreserve.gov/releases/h15/data/m/fp3m.txt>

Response to Request 9 of 39

9. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 8, lines 8-13, please provide a copy of each Form 10-K relied upon or referred to by Mr. Brown in concluding that the appropriate long-term debt cost for use in this proceeding is 6.83 percent.

Answer:

See response to requests 20 and 33. Also, data on the comparable companies' debt is available from the United States Securities and Exchange Commission's data base which is available to the public.

The SEC's files for each comparable company are available at:

Atmos -

<http://www.sec.gov/Archives/edgar/data/731802/000095013402014920/d01510e10vk.txt>

Peoples:

<http://www.sec.gov/Archives/edgar/data/77385/000007738502000054/form10k.htm>

NICOR -

<http://www.sec.gov/Archives/edgar/data/72020/000095013703001832/c75779e10vk.htm>

WGL -

<http://www.sec.gov/Archives/edgar/data/1103601/000095013302004208/w66936e10vk.htm>

AGL -

Interest Expense -

<http://www.sec.gov/Archives/edgar/data/1004155/000100415503000046/exhibit12.htm>

Debt Value -

<http://www.sec.gov/Archives/edgar/data/1004155/000100415503000046/exhibit13.htm>

NWN -

<http://www.sec.gov/Archives/edgar/data/73020/000095012003000141/form10k.txt>

NJR -

<http://www.sec.gov/Archives/edgar/data/356309/000095012302012107/y66677exv13w1.txt>

Response to Request 10 of 39

10. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 12, lines 27 through 30, please explain, in detail, every reason why, in Mr. Brown's view, the capital structure ratios utilized by Dr. Murry "are not verified nor even remotely based on Dr. Murry's comparable companies" and provide a copy of each and every document, treatise or financial accounting standard upon which Mr. Brown relied in reaching such conclusion.

Answer:

The documentation is provided in Dr. Brown's Schedule 2 through 7, which prove that Dr. Murry's capital structure ratios are not based on the comparable companies' capital structures.

Response to Request 11 of 39

11. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 14, lines 26 through 31, please explain, in detail, every reason or fact supporting Mr. Brown's view that the capital structures of Dr. Murry's comparable companies "should properly be the basis for this proceeding's capital structure, not Piedmont's" and provide a copy of each and every document, treatise or financial accounting principle upon which Mr. Brown relied in reaching such conclusion.

Answer:

Refer to Dr. Brown's direct testimony, section III. A, from page 12 to page 16.

Response to Request 12 of 39

12. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 15, lines 18 and 19, please explain, in detail, every reason or fact supporting Mr. Brown's assertion that "It is standard regulatory practice to determine capital structure with comparable-company data" and provide a copy of each and every document, treatise or financial accounting principle upon which Mr. Brown relied in reaching such conclusion.

Answer:

This is self evident from the testimony of the cost of capital witnesses in this case. The best example is from Dr. Murry himself, whose Schedules DAM-1 and DAM-4 represent an equivalency between Piedmont's 53.4 percent equity ratio and the 53.4 percent average equity ratio of the comparable companies, which also implies an equivalency between Piedmont's debt ratios and the average debt ratios of the comparable companies.

Response to Request 13 of 39

13. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 19, lines 28 through 33, please identify each and every United States Securities and Exchange Commission document utilized by Mr. Brown to verify his opinion that SEC data provides a capital structure completely different from Piedmont's proposed capital structure and provide a copy thereof.

Answer:

Refer to the SEC files available at the SEC's web site and listed in the responses to questions 7 and 9 and to Dr. Brown's Schedule 3.

Response to Request 14 of 39

14. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 20, lines 27 through 30, please provide a copy of every document or other source of information reviewed by or relied upon by Mr. Brown in reaching his conclusion that "The comparable companies credit arrangements and loan covenants, whether short-term or long-term, are based on total debt."

Answer:

The conclusion is based on the statements made by the comparable companies in their SEC forms listed in the responses to questions 7 and 9. Those statements appear in Dr. Brown's Schedule 3.

Response to Request 15 of 39

15. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 20, lines 32 through 37, please provide a copy of all documents reviewed, relied upon or referred to by Dr. Brown, and all workpapers underlying his conclusion that "When short-term debt is included in the comparable companies capital structure, their average common equity ratio is 43.8% for the fiscal year ending 2002 and 42.7% for the fiscal year ending 2001."

Answer:

This conclusion is the result of the information in the SEC files already referred to. Refer to Dr. Brown's Schedule 3.

Response to Request 16 of 39

16. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 21, lines 1 through 4, please provide a copy of all documents reviewed, relied upon or referred to by Dr. Brown, and all workpapers underlying his conclusion that "The comparable companies average short-term debt ratio is 12.2% for the fiscal year ending 2002 and 14.6% for the fiscal year ending 2001."

Answer:

This conclusion is the result of the information in the SEC files already referred to. Refer to Dr. Brown's Schedule 3.

Response to Request 17 of 39

17. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 23, lines 33 and 37, please explain, in detail, every reason or fact supporting Mr. Brown's assertion that "The information put forward by Value Line and used by Doctor Murry is not reliable and not certified" and provide a copy of each and every document, treatise or financial accounting principle upon which Mr. Brown relied in reaching such conclusion.

Answer:

With regard to unreliability, refer to Dr. Brown's Schedules 2, 3, 4, 5, 6, and 7 and pages 28 and 29 of Dr. Brown's testimony, which prove that the equity ratios of Value Line and Dr. Murry are unreliable.

With regard to Value Line's data not being certified, refer to Dr. Brown's testimony page 5, which displays Value Line's disclaimer of responsibility for errors and omission in Value Line's data.

Response to Request 18 of 39

18. Identify by caption and docket number each and every proceeding before the Tennessee Regulatory Authority or its predecessor in the last ten (10) years in which Mr. Brown or any other witness sponsored by the Consumer Advocate has relied upon or incorporated into his or her testimony financial information taken from Value Line and provide a copy of each such testimony.

Answer:

The Consumer Advocate objects to Nashville Gas Company's request on the ground that it is contrary to the parties' agreement to streamline discovery by limiting the scope of background information and prior testimony of expert witnesses.

Without waiving the objection, the Consumer Advocate provides the following response:

The Consumer Advocate may have used Value Line data to research dividend payout ratios and capital structure history in the following cases: TRA Docket Nos. 95-02116 AGL (Chattanooga Gas); 95-02258 United Cities; and 95-02614 BellSouth. The Consumer Advocate is unable to locate a copy of this testimony at this time. See also TRA Docket No. 96-00977 Piedmont (Nashville Gas) (Nashville Gas should be in possession of this testimony) and 97-00982 AGL (Chattanooga Gas) (copy of testimony attached).

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INTRODUCTION

1
2
3 **Q. Please state your name.**

4
5 A. Stephen N. Brown.

6
7 **Q. Where do you work and what is your job title?**

8
9 A. I am a Senior Economist in the Consumer
10 Advocate Division, Office of the Attorney
11 General.

12
13 **Q. What are your responsibilities as Senior**
14 **Economist?**

15
16 A. I review companies' petitions for rate changes
17 and follow the economic conditions that affect
18 the companies.

19
20 **Q. What experience do you have regarding**
21 **utilities?**

22
23 A. From 1986 to 1995 I was employed by the Iowa
24 Utilities Board as Chief of the Bureau of
25 Energy Efficiency, Auditing and Research, and
26 Utility Specialist and State Liaison Officer to
27 the U.S. Nuclear Regulatory Commission. From
28 1984 to 1986 I worked for Houston Lighting &
29 Power as Supervisor of Rate Design. From 1982
30 to 1984 I worked for Arizona Electric Power
31 Cooperative as a Rate Analyst. From 1979 to
32 1982 I worked for Tri-State Generation and
33 Transmission Association as Power Requirements
34 Supervisor and Rate Specialist. From 1979
35 through 1995 my work spanned many issues
36 including cost of service studies, rate design
37 issues, telecommunications issues and matters
38 related to the disposal of nuclear waste.
39

1 **Q. What is your educational background?**

2
3 A. I have an M.S. in Regulatory Economics from the
4 University of Wyoming, an M.A. and Ph.D. in
5 International Relations with a specialty in
6 International Economics from the University of
7 Denver, and a B.A. from Colorado State
8 University.
9

10 **Q. Dr. Brown, have you authored any articles**
11 **relating to your profession?**

12
13 A. Yes, my articles have appeared in Public
14 Utilities Fortnightly and the Electricity
15 Journal.
16

17 **Q. Are you and have you been a member of any**
18 **professional organizations, Dr. Brown?**

19
20 A. Yes, I am a past member of the NARUC Staff
21 Committee on Management Analysis, a past
22 trustee of and a member of the Board for the
23 Automatic Meter Reading Association, and a
24 current member of the National Association of
25 Business Economists.
26

27 **Q. Have you studied mathematics and statistics as**
28 **part of your education?**

29
30 A. Yes.
31

32 **Q. Dr. Brown, do you use mathematics and**
33 **statistics in combination with economics as**
34 **part of your profession?**

35
36 A. Yes.
37

38 **Q. What were you asked to do with respect to this**

1 **case?**

2
3 A. I was asked to form an opinion on the
4 appropriate market-based common equity return,
5 the appropriate overall cost of capital and the
6 appropriate capital structure for Atlanta Gas
7 Light (AGL) Company's wholly owned subsidiary in
8 Tennessee, Chattanooga Gas (CG) Company, as well
9 as to evaluate and assist in the evaluation of
10 the rate of return proposed by other witnesses
11 in this docket.

12
13 OPINION ON EQUITY RETURN

14
15 **Q. In your opinion what rate of equity return is**
16 **just and reasonable?**

17
18 A. In my opinion an equity return of 10.55% is
19 just and reasonable.

20
21 **Q. Dr. Brown, what did you do to identify this**
22 **just and reasonable return?**

23
24 A. I examined a group of natural gas companies
25 comparable to AGL.

26
27 AGL IS THE APPROPRIATE COMPANY FOR COMPARISON

28
29 **Q. Why did you consider AGL the appropriate**
30 **company for deriving the equity return?**

31
32 A. CG's common equity is owned completely by AGL
33 and is not publicly traded or available over
34 the counter. Investors who desire a common
35 equity interest in CG have only one way to
36 obtain that interest--acquire common stock in
37 AGL Resources, whose financial fate is
38 determined by its prime subsidiary, AGL.

These facts alone suggest that AGL is central to the equity analysis. Also, in this docket AGL's management is well-represented. The company's witnesses -- Messrs. Thompson, Hinesley, and Overcast and Lisa Wooten -- are employed by AGL directly and none of them ever worked for CG directly. This is ample evidence that AGL management strongly directs CG's activities thus making AGL rather than CG the focus of equity analysis.

The direct involvement of AGL's management in this docket clearly indicates that CG's operations are completely intermingled with AGL's, to the point that CG is an operating company under AGL's management in much the same way that Savannah Gas is an operating company under AGL. When AGL has a rate case in Georgia, Savannah Gas is not singled out as a stand-alone investment of funds which forms the basis for a rate of return. Likewise, CG is not a stand-alone investment that forms the basis for a rate of return. The company's cost-of-capital witness, Dr. Andrews, concedes this point very early in his testimony at page 4 lines 12-13, where he says "I undertake the analysis of CGC as if it were [emphasis added by Dr. Brown] a stand-alone investment of funds." To me, the wording "as if it were" means one of two things: either CG is not in fact a stand-alone investment or he does not know if it is a stand-alone investment.

Finally, Dr. Andrews, at page 48 lines 6-8 of his direct testimony, suggests the capital structure of AGL Resources be used to compute CG's weighted cost of capital. These aspects of the rate filing make it appropriate to

1 determine the cost of capital by using AGL and
2 companies that are comparable to AGL.

3
4 **Q. Does Dr. Andrews base his cost-of-capital**
5 **analysis on AGL and companies comparable to**
6 **AGL?**

7
8 A. No, but his recommended return includes a
9 premium meant to compensate AGL Resources.

10
11 **Q. What companies form the basis for Dr. Andrews'**
12 **cost-of-equity analysis?**

13
14 A. He selects 22 "small" companies that have
15 actively traded stock, that issue bonds and
16 stocks, and which complete and file regular
17 reports with the Securities and Exchange
18 Commission. In contrast to CG, which is a
19 subsidiary of AGL, many of the 22 companies are
20 parent companies themselves with subsidiaries
21 underneath them. Several of the 22 companies
22 also operate in multi-state jurisdictions.

23
24 **Q. In your opinion do these "small" companies are**
25 **a rational basis for a cost-of-equity analysis**
26 **in this docket?**

27
28 A. No, I do not. On their face the 22 companies
29 markedly differ from CG, and there is no
30 objective basis for adjusting them so that they
31 would somehow be comparable to CG. Because I
32 focus on AGL, my cost-of-equity analysis uses a
33 completely different set of companies than Dr.
34 Andrews' analysis. A cost-of-equity analysis
35 starts with the selection of comparable
36 companies. To the extent the parties in this
37 docket disagree about the starting point of an
38 analysis, the TRA's job of assessing each

1 analysis becomes more difficult. However, I
2 have other sound and objective reasons for
3 disagreeing with Dr. Andrews' analysis and
4 results, as I will discuss at a later point in
5 my testimony.
6

7 COMPARABLE COMPANIES SELECTED BY DR. BROWN
8

9 **Q. Dr. Brown, what comparable companies did you**
10 **use in your analysis?**
11

12 **A.** I selected a group of companies composed of AGL
13 Resources, Bay State Gas Company, Brooklyn
14 Union Gas Company, Indiana Energy, Laclede Gas,
15 Northwest Natural Gas, Peoples Energy, and
16 Washington Gas Light Company. Like AGL, all of
17 these companies have subsidiaries.
18

19 **Q. What evidence do you offer to substantiate your**
20 **assertion that AGL is comparable to the other**
21 **eight companies?**
22

23 **A.** The proof of comparability appears in Schedule
24 1. The top portion is titled "Market
25 Statistics" and the bottom portion is titled
26 "Financial Behavior." The market statistics
27 show the strong similarity of the companies.
28 For example, as of December 1996 the ratios of
29 the market price to the book value are similar,
30 and so are the equity ratios, dividend yields,
31 the value of the holdings per shareholder and
32 the average number of years the stock is held.
33 However, the market values have a large spread.
34 The smallest value, \$343 million, is about only
35 one-fourth of the largest market value.
36

37 **Q. Dr. Brown, is the difference in market values**
38 **of the comparables you selected meaningful?**

1
2 A. No. My examination of the companies shows that
3 they exhibit similar financial behavior, as
4 indicated by the way they responded to the
5 publication *Value Line's* criticism of the gas
6 distribution industry. That criticism is quoted
7 in Schedule 1. In early 1995 *Value Line* warned
8 investors to be wary of gas companies that paid
9 out more than 80% of their earnings to
10 dividends. Prior to *Value Line's* warning many
11 payout ratios exceeded 80%. From 1995 to 1996,
12 however, every company lowered its payout ratio
13 to levels below 80%. This deliberate response
14 by all the companies makes it clear that they
15 have comparable financial behavior.
16

17 Q. Is your opinion of the equity return different
18 from the equity return recommended by Dr.
19 Andrews?
20

21 A. Yes, he recommends a higher, speculative range
22 of 11.5% to 12.5% and prefers 12.25%, a much
23 higher, speculative rate.
24

25 Q. Upon what do you base your equity return
26 opinion?
27

28 A. I base my opinion on my analysis of AGL's
29 market-based cost of common equity, which is
30 supported by my analysis of comparable
31 companies.
32

33 Q. In your opinion what rate of equity return
34 should the Tennessee Regulatory Authority allow
35 in this docket?
36

37 A. My opinion is that the Tennessee Regulatory
38 Authority (TRA) adopt the equity return of

1 10.55%.

2
3
4 TESTS OF RECOMMENDED EQUITY RETURN

5
6 **Q. Dr. Brown, did you compare your equity return**
7 **to those of independent sources?**
8

9 A. Yes. Chart One summarizes the tests I made. I
10 compared my results to the information
11 published by Merrill Lynch regarding the
12 required rates of return for gas distribution
13 companies in general. I also compared my
14 results with the equity returns recently
15 granted by the Illinois Commerce Commission and
16 the Virginia State Corporation Commission to
17 United Cities, a company currently under the
18 TRA's jurisdiction and one that is included in
19 Dr. Andrews' analysis. The Merrill Lynch
20 returns are shown in Schedule 2. Press releases
21 announcing the Illinois and Virginia decisions
22 are attached as Schedules 3 and 4 respectively.
23

24 **Q. What was your reason for using Merrill Lynch's**
25 **data?**
26

27 A. Merrill Lynch's data reflects the marketplace
28 for gas distribution companies, and I have used
29 their data as a basis of comparison in prior
30 rate cases. From January 1995 through May 1997
31 Merrill Lynch's equity-return estimates have
32 ranged from a high of 11% to a low of about 9%.
33 My recommendation of 10.55% approximates
34 Merrill Lynch's upper limit of recent equity
35 returns for the natural gas distribution
36 industry.
37

38 **Q. What was your reason for comparing the recent**
39 **equity awards by two state commissions?**

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38

A. My reason for comparison was to consider independent sources. The comparison merely demonstrates that my recommended return is consistent with recent regulatory decisions regarding equity returns in other jurisdictions.

Q. Did you compare the data from Merrill Lynch and from the various states to Dr. Andrews' recommended return to equity?

A. Yes. Dr. Andrews' recommended return substantially exceeds any reasonable return for the industry, and therefore is more than just and reasonable.

Q. Dr. Brown, is the return you are presenting a fair return?

A. Yes. It is a fair return because it compensates the company for ordinary financial risks it is taking to be in the gas distribution business.

Q. What are the sources of ordinary financial risk to the company?

A. The major risk is that the company's expenses would increase faster than its revenues. However, in this case that risk is negligible. The company's rate base, expenses, and sales are based on projected amounts for a 12-month period ending September 1998. These factors are the basis for the prices that come out of this docket. However, the company's prices are likely to be applied almost a full year before the projections are realized.

1 For there to be any risk, the company's
2 projected expenses would have to be far less
3 than what actually occurs, or the company's
4 projected sales of gas would have to very
5 different from the actual sales. I know of no
6 substantial evidence suggesting that the
7 company's forecasts will create a financial
8 hardship.

9
10
11 **Q. Dr. Brown, is your rate of return sufficiently**
12 **high to allow the company to attract capital**
13 **and to maintain creditworthiness?**

14
15 **A.** Yes. An annual return of 10.55% is certainly
16 high enough to attract capital and to maintain
17 creditworthiness. The rate-of-return principles
18 of capital attraction and maintenance of credit
19 were set in the *Bluefield* decision, and the
20 rate of return I recommend considers these
21 factors.

22
23 Also, 10.55% is an understatement of the amount
24 that the company actually has an opportunity to
25 earn because the actual annual return is
26 achieved through monthly compounding, which
27 raise the return by approximately one-half a
28 percent to 11%.

29
30 DISCUSSION OF MONTHLY COMPOUNDING

31
32 **Q. Is the monthly compounding process typical of**
33 **the financial world?**

34
35 **A.** Yes.

36
37 **Q. Do monthly earnings have to be constant for**
38 **monthly compounding to operate?**

1
2 A. No. Schedule 6 shows that compounding occurs
3 with income-losses and with income-gains. The
4 Schedule is based on the actual monthly income
5 and losses of AGL for the fiscal year 1996. The
6 far right-hand column clearly shows that
7 monthly compounding of \$1 at an allowed annual
8 return of 10.55% leads to an effective return
9 of 11.0%. With regard to column (6), at the
10 bottom, the total return is shown as 11.02
11 cents. The total return would equal 10.55 cents
12 only if the monthly return in column (6) is not
13 added into the cumulative balances in columns
14 (5) and (7), i.e., the cumulative balance would
15 have to be \$1 throughout the entire year. But
16 this is not how financial processes work -
17 cumulative balances are maintained on a monthly
18 basis and changes to the balances are recorded
19 monthly - not just annually.
20

21 Q. Dr. Brown, are you this docket's only cost-of-
22 capital witness who believes that compounding
23 is a typical financial process?
24

25 A. No. Dr. Andrews has made several statements
26 indicating his opinion that compounding is a
27 typical financial process:
28
29

- 30 1. Dr. Andrews, in his direct
31 testimony page 27, line 5 says
32 that "financial processes
33 occur continuously."
34 Therefore, his discounted cash
35 flow (DCF) analysis is
36 predicated on dividends
37 continuously compounding,
38 indicated at page 26 line 18
39 of his testimony, a situation

1 where compounding goes on
2 moment-by-moment, a far more
3 rapid rate of compounding than
4 a monthly rate.
5

6 2. Dr. Andrews' direct testimony,
7 page 28, lines 15-17, suggests
8 that compounding a return of
9 9.53% leads to an effective
10 return of 10%, clearly
11 indicating that compounding
12 adds approximately one-half
13 percent to the return. This is
14 the same point that I have
15 made about compounding.
16

17 3. Dr. Andrews was cross-examined
18 in Docket 95-02116 and stated
19 that "Financial processes
20 occur smoothly and
21 continuously. They go -- if
22 this makes the point for you -
23 - minute by minute, hour by
24 hour, day by day and they are
25 not interruptible." His
26 statement occurs at page 8,
27 lines 20-23 of the transcript.
28 A copy of the transcript's
29 cover page and page 8 of the
30 transcript are attached to my
31 testimony as Schedule 7, pages
32 1 and 2 respectively.
33

34 4. His statements under cross-
35 examination are consistent
36 with his direct testimony page
37 28 lines 10-11, where the
38 question is asked if there is
39 "complete equivalency between

1 the continuous" rate, such as
2 9.53%, and a so-called
3 "finite" rate, such as 10%. He
4 answers "Yes."

- 5
6 5. His responses in his
7 deposition of September 9 are
8 also consistent with his
9 testimony. For example, at
10 page 58 line 16 of the
11 deposition he was asked how
12 often compounding occurred:
13

14 "Q. Right, and it
15 doesn't even have to
16 be a series of years,
17 it can be series of
18 months, can't it?"
19

20 To which Dr. Andrews
21 responded:
22

23 "A. It could be done
24 months, weeks, days."
25

26 He was also asked in the
27 deposition, at page 59 line
28 10, whether he concurred that
29 compounding is typical of
30 financial processes:
31

32 "Q. ...compounding is
33 essentially accepted
34 by all of our
35 financial markets?"
36

37 To which he responded:
38

39 "A. Sure."

1
2 **Q. What does the term "compounding" mean?**
3

4 A. The term compounding refers to a process that
5 begins with a certain financial resource,
6 generally called the base or the principal, and
7 then the changes in that are added back into
8 the base or the principal to create a new
9 balance. The changes can be either positive or
10 negative, meaning that the principal is either
11 growing or declining.
12

13 Two things affect compounding.
14

15 The time-frame of compounding -- how
16 quickly is the change added back to
17 the base? It could occur once a
18 decade, once a year, once a month,
19 every day or every second.
20

21 The size of the change during the time
22 frame -- does the base change by 1% a
23 month each month or does it change by
24 2% in some months and 3% in other
25 months?
26

27 The financial community puts these concepts
28 together to say things like "your investment is
29 growing at a rate of 10% per year this year,
30 but last year it lost money at annual rate of
31 3%." Therefore, compounding describes financial
32 gains as well as financial losses and does not
33 have to occur at the same rate from one moment
34 to the next.
35

36 **Q. Is compounding process related to concept of**
37 **working capital?**
38

39 A. No. Working capital encompasses only the funds

1 needed by the company to meet its current
2 liability, i.e., the company has to have the
3 funds available to meet its demands for cash
4 flows.
5

6 **Q. Why are you referring to working capital?**
7

8 A. I raise it now to assure the TRA does not view
9 monthly compounding as akin to working capital,
10 where positive and negative cashflows are
11 balanced by short-term lending and short-term
12 borrowing.
13

14 **Q. Is monthly compounding an accurate description**
15 **of how a distribution company accumulates**
16 **annual return even when the company experiences**
17 **seasonal variations in sales, revenues and**
18 **expenses?**
19

20 A. Yes. The returns in the months when sales are
21 high balance the returns in the months when
22 sale are low. This is true whether the annual
23 return is viewed as a sum of compounded monthly
24 returns or as just the sum of twelve monthly
25 returns that are not compounded. However,
26 monthly compounding reflects the true nature of
27 financial transactions. Revenues flow in every
28 working day and are available for immediate
29 reinvestment. The company's stocks and bonds
30 can be bought and sold every working day of the
31 year. The best indication that the compounding
32 process underlies the company's financial
33 transactions is the company's late fee, which
34 is applied to consumers' monthly bills if they
35 are not paid by the past due date. The late fee
36 truly shows that "time is money." The quicker
37 the company has the money, the quicker it can
38 be invested to achieve additional returns. This
39 is a perfect fit with the monthly compounding

1 cycle that typifies financial transactions in
2 our economy. If monthly compounding were not
3 how a gas company accumulated its annual
4 return, there would be no economic basis for
5 charging a late fee.
6

7 **Q. When Dr. Andrews' recommended equity return of**
8 **12.25% is compounded monthly, what return is**
9 **the company being given an opportunity to earn?**

10
11 **A.** The company is being given an opportunity to
12 earn about 12.8%
13

14 MORE EVIDENCE THAT AGL IS THE APPROPRIATE
15 COMPANY FOR COMPARISON
16

17 **Q. If Dr. Andrews' recommended return of 12.25% a**
18 **just and reasonable return?**

19
20 **A.** No. His preference for 12.25% is meant to
21 compensate AGL Resources (the parent of AGL)
22 for the premium the company paid when it
23 purchased CG. At page 3, lines 5-8 of his
24 testimony Dr. Andrews states. "The point
25 estimate is slightly off center in an upward
26 direction in recognition of AGL Resources'
27 long-run inability to earn on a rate base that
28 includes the acquisition premium it paid as
29 part of the price for CGC."
30

31 **Q. What inferences do you make from Dr. Andrews'**
32 **statement?**
33

34 **A.** The statement confirms that this rate case is
35 about AGL's return and that AGL and companies
36 comparable to AGL should form the basis for an
37 equity analysis. Dr. Andrews' statement also
38 contradicts his later statement at page 4 lines

1 9-10 where he states: "the source of an
2 investment's financing does not dictate its
3 fair rate of return." His recommendation of
4 12.25% clearly aims at achieving a return for
5 AGL, the owner of CG.
6

7 **Q. Is Dr. Andrews choice of 12.25% as his**
8 **preferred return consistent with his statement:**
9 **"I treat CGC as if it were a stand-alone**
10 **investment of funds?"**
11

12 **A.** No. If CG were a stand-alone investment there
13 would be no reason for Dr. Andrews to consider
14 the acquisition premium as a factor or
15 justification for choosing 12.25%. This
16 justification is Dr. Andrews' tacit recognition
17 that CG is not a stand-alone investment.
18

19 **Q. How does Dr. Andrews' supposition of CG as a**
20 **"stand-alone" investment compare with the**
21 **testimony of other witnesses for AGL?**
22

23 **A.** His supposition is contrary to the facts
24 presented by Mr. Thompson, whose direct
25 testimony, pages 11 through 22, describes the
26 various support services that AGL provides to
27 CG. For example, at page 17 line 6 Mr. Thompson
28 lists several functions provided by AGL. At
29 page 16 lines 4-15 Mr. Thompson indicates that
30 AGL's Treasury and Corporate Accounting
31 departments handle many transactions for CG. At
32 lines 7-8 he says, "All checks for Chattanooga
33 Gas Company are written by AGL." At page 13
34 line 11 he describes the various departments
35 that have been eliminated at CG.
36

37 **Q. Do you agree with Dr. Andrews' testimony, at**
38 **page 6 line 8, that CG has "sharply expanded**

1 **demands for financing."**

2
3 A. No. His statement is contradicted by the
4 capital structure information the company
5 supplied in this docket and in its prior rate
6 case. In docket 95-02116, the company submitted
7 a capital structure of \$96.846 million. That
8 structure is attached to my testimony as
9 Schedule 8. In the current docket the company
10 submitted a capital structure of \$95.843
11 million, shown in the company's filing as
12 Exhibit 5 Schedule 9. AGL is withdrawing its
13 investment from Tennessee rather than suffering
14 from a sharply expanded demand for financing
15

16 **Q. What is the implication of the \$1 million**
17 **decline regarding CG as a "stand-alone**
18 **investment?"**
19

20 A. If a stand-alone company's capital dropped by
21 \$1 million, there would be an accounting trail,
22 but in this instance there is no trail at all
23 for CG. Therefore, the \$1 million difference
24 has to be the result of AGL's decisions and way
25 it adds and subtracts funds to its Tennessee
26 operations.
27

28 DERIVATION OF DR. BROWN'S EQUITY RETURN:
29 DCF ANALYSIS
30

31 **Q. Did you perform an analysis to determine what**
32 **the return to equity should be for AGL's wholly**
33 **owned subsidiary?**
34

35 A. Yes. I performed two analyses: one based on the
36 Discounted Cash Flow (DCF) model and another
37 based on the risk premium model.
38

1 Q. What is the Discounted Cash Flow model?

2
3 A. The DCF model is a standard way that investors
4 evaluate their potential returns. The model
5 defines the cost of common equity as the
6 dividend yield plus the dividend's expected
7 growth rate.
8

9 Q. What is the advantage of using the DCF model?

10
11 A. It does exactly what every investor does. It
12 pays close attention to the company's dividend
13 per share of common stock and to the company's
14 ability to raise or lower the dividend and the
15 dividend yield.
16

17 Q. What is the dividend yield?

18
19 A. Dividend yield is measured as the company's
20 annual dividend divided by the price for the
21 company's stock. I've used the average dividend
22 yield of the comparable companies as a proxy
23 for AGL's dividend yield. The calculations are
24 shown in my Schedule 9. In this instance the
25 calculated dividend yield is 5.17%.
26

27 Q. What did you use to measure dividend growth?

28
29 A. Since AGL's current dividend growth rate is
30 barely above zero, I used the growth rate
31 derived from Value Line's projection of AGL's
32 dividend in the year 2000, which suggests a
33 growth rate of 5.23% in the near future. Thus
34 my estimated DCF equity return is 10.40%, shown
35 in Schedule 9.
36

37 Q. Does the DCF Model account for capital gains
38 that may occur when an investor sells stock?
39

1 A. No. The DCF model avoids entanglement with
2 either capital gain or capital loss because the
3 model is tied directly to dividend yield and
4 dividend growth. In addition, losses and gains
5 are a matter of the investor timing the stock's
6 purchase and sale. The DCF model neither
7 protects investors from risk nor penalizes them
8 for what happens in the stock market.
9

10
11
12 DERIVATION OF EQUITY RETURN:
13 RISK PREMIUM ANALYSIS
14

15
16 Q. In addition to your DCF model, did you use
17 another method to determine the market based
18 cost of common equity?
19

20 A. Yes. I used the risk premium method which
21 defines the cost of equity as the market's
22 current debt yield plus an estimated risk
23 premium. For example, a current debt yield of
24 7% plus an estimated market wide risk premium
25 of 3% produces an estimated common equity cost
26 of 10%.
27

28 Q. Is a risk premium analysis different from a DCF
29 analysis?
30

31 A. Yes, the two analyses are completely different.
32 For example, dividend growth and dividend yield
33 are crucial to the DCF analysis, but they have
34 no role whatsoever in a risk premium analysis.
35

36 Q. What is the rationale of risk premium analysis?
37

38 A. Investors require extra payments to assume

1 additional risk. Economists call this extra
2 payment a risk premium. Equity investments are
3 riskier than debt because equity investments
4 occasionally lose money, thus equity investors
5 require a risk premium or a higher return than
6 debt. For example, equity holders are last in
7 line for the distribution of earnings and also
8 last in line for distribution of liquidation
9 proceeds. In both cases the debt holders are
10 paid first. Any funds left are distributed to
11 the equity holders. Therefore, the cost of
12 equity is the debt yield plus a risk premium
13 for the company.
14

15 **Q. How did you derive your risk premium model?**

16
17 **A.** The model is derived as follows:
18

19
$$K_e = R_f + (R_m - R_f) * B_e \quad (1)$$

20

21 where
22

23 K_e is the cost of equity
24

25 R_m is the market rate of return
26

27 R_f is the risk free rate of return
28

29 B_e is the beta for common stock
30

31 and
32

33
$$K_d = R_f + (R_m - R_f) * B_d \quad (2)$$

34

35 where
36

37 K_d is the cost of debt
38

39 R_m and R_f are defined above

B_d is the beta for debt

Subtract equation (2) from equation (1) and the result is

$$K_e = K_d + (R_m - R_f) * (B_e - B_d)$$

I treat the beta for debt, B_d , as if it were zero. Since B_d is zero, this raises the cost of common equity that can be derived from this model. Since B_d is zero, the final result is

$$K_e = K_d + (R_m - R_f) * (B_e) \quad (3)$$

Q. What is the procedure for deriving the cost of equity from this risk premium model?

A. The procedure has six steps:

1. Estimate the market's current cost of debt - K_d .
2. Estimate market-wide rate of return for common equity - R_m .
3. Estimate the market-wide risk-free investment - R_f .
4. Take the difference between steps 2 and 3
5. Multiply the difference by a so-called "Beta" - B_e .
6. Add the result of step 5 to the debt cost in step 1. The result is the estimated cost

of equity from the risk
premium model

RISK PREMIUM MODEL: CURRENT COST OF DEBT

Q. What do you use as the current cost of debt - K_d ?

A. Since AGL's bonds retain an A rating, I use the monthly average of A-rated bonds for May 1996 through April 1997. Those are shown in Schedule 10 and represent the current trend in capital cost for debt issues of A-rated utility bonds.

Q. What is the value of the K_d ?

A. The value of K_d is 7.95%.

Q. Are the A-rated bonds long-term bonds?

A. Not necessarily. For example, the source for this information is the Federal Reserve Board which says these bonds have a maturity of 30 years but call-protection for only 5 years, i.e., after 5 years and depending on the issuing company's discretion, the bonds can be repurchased from the investor.

Q. Is it typical for companies to have call provisions in their bonds?

A. Yes.

Q. What is the purpose of a call provision?

1 A. It gives the company control and flexibility
2 regarding the disposition of its funds and
3 transfers the risk of interest rate changes
4 from the company to the investor. For example,
5 if a company issues bonds at 10% and six years
6 later interest rates drop to 7%, the company
7 has the option of "calling" the bond from the
8 investor, who then has to find an alternative
9 use for the funds. Continuing with this
10 example, if the company issues bonds at 7% and
11 six years later interest rates rise to 10%, the
12 company has no need to repurchase the bond from
13 the investor, who has the choice of either
14 holding the bond or taking a loss in principal
15 if it is sold.

16
17 **Q. Why do you use the A rates as a measure of debt**
18 **cost instead of AGL's embedded debt cost?**

19
20 A. Risk premium analysis is based on market wide
21 indicators of current debt cost instead of a
22 company-specific embedded cost. Using a
23 company-specific embedded cost would mean that
24 the company with the highest debt cost would
25 also receive the highest return to equity.
26 Conversely, the company with the lowest debt
27 cost would receive the lowest return to equity.
28 Thus using a company-specific debt cost to
29 establish a risk premium would introduce
30 incentives for companies to raise their debt
31 cost as much as possible. That is unreasonable
32 logic and unreasonable financial management.
33 Fortunately, the markets don't work that way. A
34 company's return to equity is not guaranteed to
35 be a certain amount higher than the company's
36 debt cost.

37
38 **Q. Why do you use the A bond rates as a measure of**
39 **debt cost instead of the average debt cost of**

1 the comparable companies?

- 2
- 3 A. The company average would not necessarily
- 4 reflect current market rates for bonds rated as
- 5 A, the current rating for AGL's bonds.
- 6

7

8

9 RISK PREMIUM MODEL: MARKET RETURN TO COMMON EQUITY

10

11

12 Q. What do you use to estimate R_m , market-wide

13 rate of return for common equity?

14

- 15 A. I use 10.7%, the compound annual growth rate
- 16 for large company stocks from the period 1925-
- 17 through 1996. This figure is taken from
- 18 Ibbotson Associates 1997 Yearbook- Stocks
- 19 Bonds, Bills and Inflation (SBBI-1997) page
- 20 118.
- 21

22 Q. Why are using large company stocks?

23

- 24 A. The comparable companies that I use in my
- 25 analysis fit into the large company category,
- 26 defined in SBBI-1997 page 136 as any company
- 27 exceeding \$197.4 million in market value as of
- 28 September 1996. The smallest market value for
- 29 my comparable companies is \$343 million.
- 30

31 Q. Why are you using historical data to estimate

32 the risk premium?

33

- 34 A. Historical data provides a way to smooth out
- 35 the wild fluctuations in the risk premium,
- 36 which is the difference between the risk-free
- 37 return and market return to common equity.
- 38 Since return to debt is fairly stable, the

1 fluctuations are caused by the wide swings in
2 the return to equity. For example, if the
3 return to common equity is large in one year,
4 so is the premium, if the return is small the
5 next year, the premium will be negative.
6

7 **Q. Why are you using the years from 1925 through**
8 **1996 to measure the risk premium?**
9

10 A. Ibbotson provides historical information on the
11 risk premium from 1925 through 1996, and these
12 years represent the entire term for which
13 information is available. Using the entire data
14 avoids any element of subjectivity that may
15 influence the selection of only a portion of
16 the data. Neither Ibbotson nor anyone else I
17 know of recommends using just a portion of the
18 data. SBBI-1997 discusses this issue at pages
19 152-153: "A proper estimate of the expected
20 risk premium requires a long data series, long
21 enough to give a reliable average without being
22 unduly influenced by very good and very good
23 and very poor short term returns ... More
24 generally, the 71 year period starting with
25 1926 is representative of what can happen.
26 SBBI-97 also warns: "Some analysts calculate
27 the expected equity risk premium over a
28 shorter, more recent time period...this view is
29 suspect."
30

31 **Q. Why are you using 10.7% as the estimate of the**
32 **market-wide rate of return to common equity?**
33

34 A. I use that figure because it represents normal
35 performance in the market. I have two reasons
36 for saying so.
37

38 The first reason is a plain and simple one:
39 10.7% is the actual compound rate of growth in

the value of large companies' common stocks. SBBI-1997, at page 49 states: "One dollar invested in large company stocks at year end 1925, with dividends reinvested, grew to \$1370.95 by year end 1996; this represents a compound annual growth rate of 10.7 percent." The year-by-year change in the large companies' value is shown in Schedule 11 column (2).

The second reason is also simple. Not all large companies' stocks have advanced at a compound rate 10.7%. Some companies have earned more than 10.7% and others have earned less. In the 71 year period covered by data, there are literally millions of possible outcomes. But out of the millions of possibilities, the number of possibilities below 10.7% are exactly equal to the number of possibilities above 10.7%. Thus 10.7% is the exact middle of all the possibilities that could have occurred. This idea may be expressed another way: there is a 50% chance that the compound return will be 10.7% and a 50% chance that a \$1 investment in 1925 would be worth \$1370.95 in 1996. Returns higher than 10.7% have a smaller chance of being achieved.

Schedule 12 and Charts 2 and 3 show the exact odds of achieving 10.7% versus the other possibilities.

Q. How did you derive Schedule 12?

A. I have provided the mathematical details in Appendix A. But the heart of the concept is simple. A \$1 investment today has two possible outcomes next year -- a gain or a loss. But in the year after next, there are four

possibilities because each possibility in the first year has two possibilities in the second year. The number of possibilities doubles each year. Thus an investment that begins with \$1 has 8 possible values three years later, 16 possible values four years later and so forth. The SBBI-97 data on large companies covers seventy one years and literally millions of possibilities. But the odds of each possibility can be easily calculated. I have done that in Schedule 12.

Q. Why have you highlighted certain portions of Schedule 12 and Charts 2 and 3?

A. I highlighted those portions to show the ties of the schedule and the charts back to Schedule 11 and to emphasize the difference between the actual rate of 10.7%, which appears at the bottom of column (2) in Schedule 11 and the figure of 12.7%, which appears at the bottom of column (3), the so-called average of the returns, which I describe as a "biased average."

Q. Why do you consider the average to be biased?

A. The average is biased in the sense that it overstates market returns and leads unwary investors into the mistaken notion that an "average" return has a 50% chance of being achieved, when it does not. The growth rate of 12.7% means that a \$1 investment in 1925 is now worth \$4768 instead of \$1371. Thus the rate of 12.7% is biased.

The bias is created in a very simple way: No one can ever lose more than 100% of their investment, i.e., 100% is the mathematical limit for losses. However, there is no mathematical limit for an investment's gain. Therefore, when percentage gains are combined with percentage losses the resulting average is mathematically biased to overstate the true gain in value. An excellent example is provided by Roger Ibbotson, the principal of Ibbotson Associates and the author of SBBI-97. In the July-August 1979 issue of Financial Analysts Journal, at page 44, he wrote::

"Suppose that \$1.00 were invested in a common stock portfolio that experienced 100 percent price appreciation in the first year and 50 percent depreciation in the succeeding year. At the end of the first year the portfolio would be worth \$2.00; at the end of the second year the portfolio would be \$1.00. The [average]...return on the portfolio would be 25 percent ..."

By adding a gain of +100% to a loss of -50%, the net is +50% and the average is 25%. Since the portfolio's value is again \$1.00, the actual return is obviously zero, not 25%. Thus, the "average return" is clearly a biased and misleading estimate of the return to equity. This example also shows that the actual return is computed by comparing numbers that represent actual values rather than by averaging numbers expressed as rates of return.

Q. Is there any situation in which the average return is not biased?

1
2 A. Yes. If the market always gains, then the
3 average is not biased. In this situation the
4 average return and the actual return are
5 identical. A divergence between the actual
6 return and the average return indicates that
7 losses have occurred. The greater the
8 divergence, the greater the losses in the
9 market.

10
11 Q. Is 10.7% derived by comparing two actual
12 values?

13
14 A. Yes, it is derived by comparing the market
15 value of large companies' common stock in 1925
16 with the their value in 1996, which I show in
17 Schedule 11.

18
19 Q. Is 12.7%, the biased average in your terms,
20 derived by averaging numbers expressed as rates
21 of return?

22
23 A. Yes, it is derived by averaging all the rates
24 of return from 1925 through 1996.

25
26 Q. Does the figure 12.7% result from the
27 mathematical bias you described?

28
29 A. Yes because there have been several years where
30 the market lost value. This is indicated in
31 Schedule 11 column (2) when the value for an
32 earlier year is greater than the value of a
33 later year. For example, the market index fell
34 from 534.46 in 1989 to 517.5 in 1990.

35
36 Q. What are the odds of a company achieving at
37 least a 12.7% return?
38

1 A. The odds are less than 1 in 5 or less than 20%,
2 indicating the return represents superior
3 performance rather than normal performance.
4

5 Q. What are the odds of a company achieving at
6 least a 10.7% return?
7

8 A. The odds are 1 in 2 or 50%, indicating that the
9 return represents normal performance.
10

11 Q. Why have you made the effort to explain the
12 differences underlying 10.7% and 12.7%?
13

14 A. Market returns vary widely over time, and when
15 people are confronted with extremes the first
16 step in clarifying the situation is to take an
17 average. But with regard to a rate of return,
18 it is a mistake to assume that an average is
19 the mid-point between the extremes and that the
20 average represents a typical value. I want to,
21 make this fact clear. In addition, I have not
22 seen any direct testimony presented to the TRA
23 or its predecessor agency where the differences
24 are explained in terms of probability. Without
25 a probability analysis the difference between
26 10.7% and 12.7% may seem tiny and unimportant.
27 However, when the probability of achieving
28 12.7% is considered, it is clear that 12.7% is
29 a return representing superior performance in
30 the market rather than normal performance. Thus
31 12.7% is not a rational basis to set a risk
32 premium rate.
33

34 Q. Is it reasonable to describe the risk premium
35 in terms of a probability analysis?
36

37 A. Yes. SBBI-97 at page 155 states: "in the
38 investment markets...returns are described by a
39 probability distribution..."

1 Q. Is the return of 10.7% certain to be achieved?

2
3 A. No, there is a 50% chance that it will not be
4 achieved.
5

6 Q. Is there disagreement about whether a risk
7 premium should be derived from 10.7% or 12.7%?
8

9 A. Yes. The disagreement is generally discussed in
10 terms of a debate about the merits of using the
11 "geometric mean" of market returns versus using
12 the "arithmetic mean" of market returns. The
13 10.7% figure is the geometric mean of large
14 companies' historical returns, and 12.7% is the
15 arithmetic mean.
16

17 Q. Are you using the geometric mean or the
18 arithmetic mean in your risk premium analysis?
19

20 A. I use the geometric mean, but I prefer the
21 phrase "actual return." I prefer to call the
22 arithmetic return the "average return."
23

24 Q. Do you have support for your choice of the
25 geometric mean over the arithmetic mean?
26

27 A. Yes. In addition to the all the reasons I have
28 already described for using the geometric mean,
29 it is also preferred by scholars in statistics
30 and finance as well as professional investment
31 firms. In 1990, Thomas Copeland, et. al.
32 published Valuation: Measuring and Managing the
33 Value of Companies. At page 193 they state:
34 "Our opinion is that the best forecast of the
35 risk premium is its long run geometric
36 average." Irving Fisher, considered to be one
37 of the world's greatest statisticians, wrote a
38 book called The Making of Index Numbers. In the

1 1967 edition of the book at pages 29 and 30
 2 Fisher says, "The simple arithmetic average
 3 produces one of the very worst index numbers.
 4 And if this book has no other effect than to
 5 lead to the total abandonment of the simple
 6 arithmetic type of index number, it will have
 7 served a useful purpose." In 1981 Richard
 8 Stevenson and Edward Jennings published,
 9 Fundamentals of Investment 2nd ed.. At page 272
 10 they say, "Why not simply average the rates of
 11 return? Indeed, in certain instances, such a
 12 procedure would be satisfactory. However, such
 13 an average would generally be meaningless." On
 14 March 13, 1990 at page C1 the Wall Street
 15 Journal ran the following story, "When Figuring
 16 the Rate of Return Don't Be Confused By The
 17 Sales Hype." The story compares the average
 18 return with the so-called compound return,
 19 another common name for the geometric return.
 20 The WSJ story says the compound return is "more
 21 widely used by investment firms."

22
 23 There is plenty of support for using the actual
 24 market return (the geometric mean) in the risk
 25 premium model.

26
 27 **Q. What portions of the risk premium model have**
 28 **you identified thus far?**

29
 30 **A.** I have identified the debt and equity portions.
 31 In terms of the model -- $K_e = K_d + (R_m - R_f) * (B_e)$
 32 --I thus far identified K_d as 7.95% and R_m as
 33 10.7%. I still have to identify R_f , the risk
 34 free return and B_e , the beta.

35
 36
 37 RISK PREMIUM MODEL: RISKFREE RATE
 38
 39

1 **Q. What represents the market-wide risk-free**
2 **investment, R_f ?**

3
4 A. In this case I am using the three-month U.S.
5 Treasury bills. I will show that the three-
6 month rate is based on a long term perspective
7 of the riskless rate and that it is a better
8 concept to use in this case than a long-term
9 bond.

10
11 **Q. What is the market-wide risk free rate of**
12 **return, R_f , based on three-month bills?**

13
14 A. The risk free rate is 3.7%, which is the
15 compound annual growth rate in the value of the
16 three-month treasury bills from 1926 to 1996.
17 Schedule 13 shows the 71 year history for
18 returns to Treasury bills, and in the entire
19 time there is no loss. The compound rate of
20 3.7% is the center of all possible outcomes
21 from a \$1 investment in three-month bills in
22 1925. The average rate is 3.8%. It is slightly
23 higher than the actual rate because there were
24 no gains in several years. The three-month rate
25 is the best measure of a riskless rate.

26
27 **Q. Why is the three-month treasury bill the best**
28 **measure of a riskless rate?**

29
30 A. There are three reasons:

31
32 1. The three-month bill is a debt
33 instrument. This fits with the risk
34 premium's basic premise: the return to
35 debt is less than the equity return
36 and equity return is determined by
37 referencing debt.

38
39 2. Of all the other debt instruments

measures that could be used -- long-term corporate bonds, long-term government bonds, the income portion of long-term government bonds and intermediate term government bonds -- the three-month bill provides the lowest rate. This is consistent with the financial concept that a risk free rate should be lower than rates that reflect risk.

3. A three-month bill is free from losses but the other debt instruments are not, i.e., they are riskier forms of investment than the three-month bill, which is why their rates are higher. Schedule 14 shows the actual return and the average return 1925 to 1996 for each of the debt instruments. For each kind of debt, the difference between columns (2) and (3) indicates the degree to which the losses occur in that particular debt market. Of all the debt instruments, the three-month bill is the safest. Investors are absolutely certain of what cash flows will be received and when they will be received. Unlike the other debt instruments, the three-month bill carries no risk of default or loss of principal.

Q. Is there a contradiction between using the three-month bill as the risk free rate while you are using the cost of A rated bonds in your model?

A. No. I have already said those bonds are not necessarily long-term notes. They have call

1 provisions that transfer the risk of interest
2 rate changes from the company to the investor.
3 The three-month bill allows the investor to do
4 the same thing the company does: avoid the risk
5 of interest-rate changes.
6

7 **Q. Is there a way to avoid the risk of losing**
8 **principal and still use long term bonds?**
9

10 A. No. SBBI-97 at page 151 suggests that long-term
11 bonds have so-called "income returns." This
12 return is the income an investor would receive
13 if the bond were purchased and held to maturity
14 rather than selling it. SBBI-97 considers the
15 income return to be the "riskless portion" of
16 an investment in long term bonds. I disagree
17 with this concept because it is irrational.
18

19 **Q. Why is the concept irrational?**
20

21 A. It is irrational because it assumes an investor
22 can divide a long term bond into a riskless
23 portion and a risky portion. This separation
24 is not credible because a bond is not severable
25 into distinct portions. The purchase of a long
26 term bond always carries the risk that changes
27 in interest rates will cause a change in the
28 bond's value. The concept of "income returns"
29 also suggests that once a long term bond is
30 purchased, the investor will take no action
31 until the bond matures and do nothing in the
32 face of interest rate changes. This behavior is
33 just the opposite of the behavior assumed in a
34 call provision, which gives the issuer the
35 flexibility to act when interest rates change.
36 It is irrational to assume that the issuer of a
37 bond is free to respond to interest rate
38 changes but that the bond's buyer is not.
39

1 Q. What portions of the risk premium model have
2 you identified thus far?

3
4 A. In terms of the model -- $K_e = K_d + (R_m - R_f) * (B_e)$
5 -- I have identified K_d as 7.95%, R_m as 10.7%
6 and R_f as 3.7%. The term $(R_m - R_f)$ is equal to 7%.
7 This amount would be smaller, as would my
8 recommended rate of return, if I were to use
9 any debt instrument other than the three-month
10 bill. For example, if I were to use long-term
11 government bonds, the term $(R_m - R_f)$ would be
12 $(10.7\% - 5.1\%)$, which equals 5.6%. This lowers
13 the risk premium equity return by 1.4%, which
14 is the difference between 7% and 5.6%. I still
15 have to identify B_e , the beta.
16

17
18 RISK PREMIUM MODEL: THE BETA
19
20

21 Q. What does beta measure?

22
23 A. Beta measures how an individual company's
24 market value changes relative to the change in
25 the value of the entire market. For example, if
26 a company's market value increases from \$10 to
27 \$11, then the company's value increases by 10%.
28 If the entire market's value increased from
29 \$1000 to \$1200, then the entire market's value
30 increases by 20%. The beta is calculated as .5,
31 which is the ratio of 10% divided by 20%.
32

33 The market itself has a beta of 1. If the
34 company's beta is one, then the company risk
35 premium is the same as the market-wide risk
36 premium. Thus if a company's beta is less than
37 1, then the company is judged less risky than
38 the market. Beta is also used to compare the
39 relative riskiness. For example, a beta of 0.4

1 is less risky than a beta of 0.6.
2

3 **Q. Did you calculate betas for AGL and the**
4 **comparable companies?**
5

6 A. Yes, and I also calculated the betas' accuracy.
7 The betas and their tests of statistical
8 accuracy, the T-statistic, appear in Schedule
9 15, pages 1 and 2 respectively. The average
10 beta shown at the bottom of page 1 Schedule 15
11 is transferred to Schedule 16, which provides
12 results of the risk premium analysis.
13

14 **Q. What is the beta's value in your model?**
15

16 A. The value is .458 and is shown in Schedule 16
17 at the bottom of column (b).
18

19 **Q. What is the estimated equity rate of return**
20 **that is derived from your risk premium model?**
21

22 A. The model gives a value of 11.14%. In terms of
23 the model -- $K_e = K_d + (R_m - R_f) * (B_e)$ -- the
24 equity return is $11.14\% = 7.95 + (10.7\% -$
25 $3.7\%) * .458$.
26

27 **Q. Do you use all the betas in Schedule 15 to**
28 **develop the figure of .458?**
29

30 A. Yes. I used the average betas that have an average
31 T-statistic greater than 1.
32

33 **Q. Why did you use the T-statistic and T-statistic**
34 **greater than 1?**
35

36 A. In general, the T-statistic indicates how well
37 a summary number represents the group from
38 which the summary number comes. In this case

the summary number is a beta, which few people are familiar with. But the T-statistic can also be explained in terms of an average, a summary number which everyone uses almost everyday.

For example, I may know that a certain group of people are, on average, 40 years old. But the average is just a short-hand description of the group. The average alone does not indicate anything about the group's composition. The group could be composed of children younger than 10 and elderly people over 70. The group as a whole just happens to have an average age of 40 even though 40 is not at all representative of anyone in the group. In this case the T-statistic is likely be low, about 1 or less. On the other hand the group could be composed of people between 36 and 42, who as a group, just happen to have an average age of 40, but in this case 40 is fairly representative of anyone in the group. In this case the T-statistic is likely to be high, about 2 or more. The higher the T-statistic, the more likely it is that a group's summary number or average is a good representation of the parts that make up the group. Statisticians express the same idea by saying "the beta is statistically different from zero."

Q. What is the economic significance of the betas' values you found?

A. All the values are far less than 1, which means that AGL and the comparable companies are far less risky investments than the market as a whole. In addition, the values do not vary much for any particular company, which means that investors do not perceive any substantial change in risk for these companies.

1
2 **Q. How did you derive the betas?**

3
4 A. I used the monthly percentage change in the S&P
5 500 index to represent the market-wide return
6 and the monthly percentage change in the
7 company's stock price to represent the
8 company's return. The change is calculated as:
9 Price at the end of the month divided by price
10 at the beginning of the month -- the result is
11 converted to a natural logarithm and then the
12 beta is calculated.

13
14 **Q. Did you compare your betas to those estimated**
15 **by anyone else?**

16
17 A. Yes. My betas are larger than those estimated
18 by Dr. Andrews for his companies, shown at
19 Schedule 9 of his direct testimony. The average
20 for his betas is .27. This figure includes 5
21 negative betas. When Dr. Andrews implements his
22 model he excludes the negative betas and raises
23 his average to .41, which is still lower than
24 the average of my betas, .458.

25
26 **Q. Is the value of .458 a reasonable value?**

27
28 A. Yes.

29
30 THE APPROPRIATE RETURN OF 10.55%
31 COMPENSATES FOR MONTHLY COMPOUNDING
32

33 **Q. What is the range of annual equity returns that**
34 **you have established?**

35
36 A. I have established a range of 10.4% to 11.14%.

37
38 **Q. In your opinion, within the range of 10.4% to**

1 **11.14% what value is appropriate?**
2

3 A. In my opinion the appropriate annual value is
4 10.55% because this compensates for monthly
5 compounding that creates annual returns. Even
6 though the range's mid point is about 10.8%,
7 this can be converted into a return of 11.3%,
8 an amount well-beyond my upper limit of 11.14%.
9

10 **Q. Are there other experts who believe that annual**
11 **returns are achieved by compounding monthly**
12 **returns?**
13

14 A. Yes. This financial principle pervades the data
15 in SBBI-97, Ibbotson's 1997 Yearbook. For
16 example, my Schedule 12, column (3) for the
17 year 1996 shows a value of .2307 or 23.07%. My
18 Schedule 17 shows exactly how .2307 is derived.
19 This process is exactly the same as the one
20 shown in my Schedule 6. Monthly compounding is
21 the basis for all the annual returns shown in
22 Dr. Andrew's Schedule 10 and my Schedule 11.
23 But this is normal because SBBI-97 at page 49
24 explicitly says: "Annual total returns...for
25 each asset class are formed by compounding the
26 monthly returns." Thus in my Schedule 12,
27 column (2) for the year 1996, the amount of
28 1370.95 equals 1.2307×1113.92 , or stated in
29 words:
30

31 Annual Return This Year Equals:
32 12 Most Recent Monthly Returns Multiplied
33 Together, Which Are Then Multiplied by
34 Annual Return Last Year.
35

36 Returning to Schedule 17, it is important to
37 notice that .2307 is larger than the sum of the
38 monthly returns in column (2). If those returns
39 were added together they would sum to only

.2148. This is further proof that annual returns are actually achieved by multiplying monthly returns together, i.e., monthly compounding. This also substantiates the findings in my Schedule 6, where an allowed annual return of 10.55% is subdivided into monthly returns that actually yield 11.0% over a 12 month period.

Q. Isn't it true that monthly compounding introduces an upward bias to a prospective annual rate of return?

A. Yes, and here is how the bias occurs. Lets say that TRA surveillance form 3.03 line 27 for a month shows an annual return of 11% for a certain company. If there is agreement that annual returns are formed by monthly compounding, then we know that the sum of the monthly returns is 10.55%, but when the returns are multiplied together the annual return is 11%. Now suppose that the company files a rate case and asks for an 11.5% return. If the proposed rate of return were subdivided on a monthly basis, the sum of the proposed monthly returns should be 11% to ensure that when they are compounded monthly, the result does not exceed 11.5%. If the monthly returns sum to 11.5%, then in effect, the allowed rate of return is 12%.

Another way to understand the compounding effect is to consider how the test year rate base is calculated. The rate base is actually an average of the rate base at the beginning of the test year and the rate base at the end of the test year. Thus the value of rate base already includes 6 months of reinvested earnings. Therefore, when a rate of return is

1 applied to the rate base, the company is —
2 actually earning on its earnings. This is
3 another way to achieve monthly compounding. If
4 this aspect were implemented in terms of
5 Schedule 6, the beginning balance would not be
6 \$1 but about \$1.06.
7

8 **Q. Is there any document in this docket where a**
9 **proposed annual return is subdivided on a**
10 **monthly basis?**
11

12 **A.** The only one I know of is my Schedule 6.
13

14 **Q. What equity return do you recommend in this**
15 **case?**
16

17 **A.** I recommend a rate of 10.55%, an amount between
18 my DCF rate of 10.4% and 11.14%, the risk
19 premium rate. I choose 10.55% because I know
20 that monthly compounding gives the company the
21 opportunity to earn a higher return. I also
22 choose 10.55% because I know that the rate base
23 already includes 6 months of reinvested
24 earnings before the rate of return is applied
25 to the rate base, thus giving the company
26 another opportunity to earn a higher return
27

28 **Q. What compounded return can the company earn**
29 **with an annual rate of 10.55%?**
30

31 **A.** The monthly compounding process gives the
32 company an opportunity to earn approximately
33 11.0%.
34

35 CAPITAL STRUCTURE AND OVERALL RATE OF RETURN
36

37 **Q. What are your findings regarding capital**
38 **structure?**

A. The capital structure in this case appears in the company's filing as Exhibit 5, Schedule 9. Since the amounts in that schedule are derived from AGL's capital structure, CA data request 42 asked the company to provide support for the calculations. The company's response is attached to my testimony as Schedule 18. None of the projected balances in that document are explained or supported by the company. For example, the preferred stock balance in 1997 is \$58.4 but the projected balance in 1998 is \$70 million. Despite this hefty increase, no explanation is provided. Continuing with this example, AGL's long term debt is shown as \$659.5 million in 1997 and 1998. However, the company's response to CA data request 24 showed a balance of \$584.5 million as of April 1997. This is an unexplained difference of \$75 million. In addition, the new debt's interest rate is not provided. Also, according to the company's response to CA data request 23, all long term debt and preferred stock is held by AGL instead of its parent holding company, AGL Resources. Therefore, the \$75 million cannot be attributed to debt issues by the holding company. Finally, AGL's response to data request 42 does not show how the amount of the CG capital structure, \$95.8 million, is derived. Instead, the response shows how \$95.8 is allocated to the different aspects of the capital structure.

In sum, the amounts shown in Schedule 18 are different than what I expected, but I do not believe the differences are material to my analysis, which relies on the portions and the estimated costs. However, my recommended overall return is neither an endorsement nor an

1 acceptance of the rate base that will be
2 applied to the overall return. To the extent
3 that the projections in Schedule 18 are not
4 supported, the company's filed rate base is
5 questionable.
6

7 **Q. What weighted overall capital cost do you**
8 **recommend?**
9

10 A. In my opinion a cost of 8.85% before
11 compounding, shown in Schedule 19.
12

13 **Q. What compounded overall return can the company**
14 **earn with an annual rate of 8.85%.**
15

16 A. The company has an opportunity to earn about
17 9.3%.
18
19
20

21 ANALYSIS OF METHODS EMPLOYED BY
22 THE COMPANY'S COST OF CAPITAL WITNESS
23

24 **Q. You have stated that you disagree with Dr.**
25 **Andrews' analysis, can you explain your**
26 **reasons?**
27

28 A. Yes. At page 4 lines 22-23 of his direct
29 testimony he states: "I measure the costs of
30 equity capital of ...small publicly held gas
31 distributing companies and impute their cost of
32 equity to CGC." I have already pointed out an
33 obvious difference between these companies and
34 CG -- they are independent financial entities
35 who have actively traded stock while CG has no
36 actively traded stock because it is a wholly
37 owned subsidiary of AGL. This alone suggests
38 that his analysis is inappropriate. However,
39 after scrutinizing his testimony and his data

sources, I conclude that his equity returns -- 14.39%, 14.38%, 14.23% , 12.5%, 12.17% and 11.06% shown at page 47 of his testimony -- are based on an irrational analysis.

SMALL COMPANY APPROACH IS IRRATIONAL

Q. Why is the analysis irrational?

A. The small company data base that he uses does not represent the performance of small companies. Instead, the data base represents the performance of one particular mutual fund out of more than 200 funds that specialize in buying and selling small company stocks. The particular mutual fund used by SBBI-97, the very same one that Dr. Andrews uses, is named the Dimensional Fund Advisors 9-10 Small Company Mutual Fund (DFA 9-10 fund). SBBI-97 at page 51 says; "...the small company stock returns series is the total return achieved by the Dimensional Fund Advisors (DFA) Small Company 9-10 Fund."

However, the fund requires an initial purchase of \$2 million dollars. This is well beyond the means of stockholders who own the companies used by Dr. Andrews. The fund also has a highly unusual ownership concentration, one that is certainly not representative of a gas distribution utility. In 1996 the fund had assets of \$1.18 billion with over \$625 million held by five owners that are actually pension funds:

OWNER	OWNERSHIP PERCENTAGE
-------	-------------------------

1	Charles Schwab & Company Inc.	31.44%
2	State Farm Insurance	10.76%
3	Pepsico Inc. Master Trust	8.87%
4	Owens-Illinois	5.48%
5	National Electrical Benefit Fund	5.26%

7 This ownership pattern and the \$2 million
 8 minimum investment clearly indicates that the
 9 so-called "returns to small companies" are
 10 actually returns to well-financed pension
 11 groups rather than being a return that is
 12 accessible to ordinary investors. There would
 13 be no incentive for anyone to make a \$2 million
 14 minimum investment and buy into the DFA 9-10
 15 fund if such returns were accessible to
 16 ordinary investors. Also, these returns are
 17 derived from the capital gains made by the
 18 constant buying and selling of stock, a far
 19 different process than the way in which a gas
 20 distribution company makes money.

22 However, even the returns themselves are open
 23 to question because the methods used to
 24 calculate the fund's return are not equivalent
 25 to the return-on-assets concept used in utility
 26 regulation. In 1996 the fund's return on assets
 27 was 8.75%. Dr. Andrews' Schedule 6, page 1,
 28 the far-left column titled "Small Company
 29 Stocks" shows the return as 17.62%. He uses
 30 this amount and the remaining figures in that
 31 column to develop the return differentials of
 32 9.16%, 7.57% and 6.86% shown on the right side
 33 of the schedule. Those amounts are repeated in
 34 Schedule 6 page 2 and in his direct testimony,
 35 at the bottom of page 45 under the column
 36 titled "Equity Diff" and lead to a huge cost of
 37 equity, 14.3%.

39 These figures are not credible, not only for the

reasons I have just discussed, but also for the overlapping directorates of the DFA 9-10 fund and SBBI-97. Mr. Robert G. Ibbotson is the Chairman and President of Ibbotson Associates, and the publisher and author of SBBI-97. He is also on the Board of Directors of the DFA 9-10 fund. This strongly implies that the small company data used in SBBI-97 is not derived from an independent source and that the data may overstate the actual returns. This possibility is already substantiated by the difference between 8.75%, the return on assets, and the so called return of 17.62% used by Dr. Andrews. Mr. Ibbotson's dual role is indicated in the Statement of Additional Information published March 28, 1997, as a supplement to a prospectus issued the same date by DFA Investment Dimensions Group, Inc.

These factors demonstrate the extraordinary weakness in the small company analogy that Dr. Andrews uses to estimate the cost of equity. But there is another contradiction in the data: in 1994 only 9 of Dr. Andrew's companies were owned by the fund, in 1995 and 1996 only 11 of the companies were owned by the fund. Thus half of Dr. Andrews' companies are not considered "small" by the fund itself.

Taken as whole these factors make it plain that the small company analogy is an irrational approach to setting the equity return in this docket. In my opinion the TRA should disregard the results of Dr. Andrews' small company analysis, shown in his direct testimony at the bottom of page 45.

Q. What are sources of data that support the assertions you have made?

1 A. My data is taken from four different sources:

- 2
- 3 1. DFA Investment Dimensions Group Annual
- 4 Reports for the Years Ended November
- 5 30, 1996 and November 30, 1994 and
- 6 DFA's SEC10K filing for 1995.
- 7
- 8 2. Statement of Additional Information,
- 9 Supplement to DFA's Investment
- 10 Dimensions Group, Inc. Prospectus of
- 11 March 28, 1997.
- 12
- 13 3. Morningstar, Inc.'s Reports on Mutual
- 14 Funds, as of May 31, 1997.
- 15
- 16 4. SEC Form 10Ks and 10Ka-1 for Dr. Andrews'
- 17 companies and the DFA Group.
- 18

19 Q. What is Morningstar Inc.?

20

21 A. Morningstar is a software and data base firm that

22 maintains records on over 8000 mutual funds and

23 tracks their performance. The company is located in

24 Chicago.

25

26 Q. What schedules have you set up from this data?

27

28 A. Schedule 20 is a summary of Morningstar's

29 reports on 230 mutual funds that specialize in

30 buying and selling small company stocks. About

31 30 concentrate on foreign stocks and the

32 remainder focus on domestic stocks. The funds

33 are arranged in descending order according to

34 the amount of the initial minimum investment.

35 The funds managed by the DFA group are among

36 the most expensive funds to purchase. Nearly

37 all of DFA's funds require \$2 million minimum

38 investment. For all 230 funds taken as a group,

39 there is a systematic difference between the

1 rate of return on assets and the 1996 return as
2 reported by the funds. The return on assets is
3 much lower than the other so-called return.
4

5 This discrepancy was so large that I was
6 compelled to cross-check the accuracy of the
7 Morningstar report on the DFA 9-10 fund against
8 the data in the DFA 1996 annual report. The
9 Morningstar report is Schedule 21 and the DFA
10 report on the fund is Schedule 22. Although the
11 data is not identical they are close enough to
12 be substantially the same. For example,
13 Morningstar reports assets of \$1107 billion and
14 the DFA annual report shows assets of \$1181
15 billion. In Schedule 21 I have highlighted the
16 portfolio statistics showing an exact match
17 between Morningstar's data and DFA's. This
18 suggests that Morningstar's calculation of a
19 return on assets is credible even though the
20 DFA report does not provide this measure. Also,
21 the DFA report, the line titled "Net Gain
22 (Losses) on Securities (Realized and
23 Unrealized)" represents capital gains and
24 losses by the fund. Clearly, the fund is
25 completely dependent on capital gains to make a
26 return, unlike a gas distribution company that
27 sells a product and a service. This, too, makes
28 the fund an unreasonable basis to develop
29 returns for a gas distribution company.
30

31 Schedule 23 shows DFA's Statement of Additional
32 Information, the cover page and pages 20-22.
33 The fund's method of calculating a return is
34 shown from Schedule 23 page 3, at the bottom,
35 to the schedule's page 4 at the top. The
36 description is vague and not articulated
37 through any readily understood example. This
38 sharply contrasts with the way all parties
39 calculate the return on assets that a gas

1 distribution utility receives. Therefore,
2 returns to mutual funds, such as the amounts in
3 Dr. Andrews' Schedule 6, page 1, the far-left
4 column titled "Small Company Stocks," cannot be
5 used to estimate the return-on-assets that is
6 granted to a gas distribution company.
7

8 Schedule 24 shows DFA's Statement of Additional
9 Information, pages 10, 11 and 15, which
10 respectively list the company directors and the
11 major owners of the fund. Mr. Ibbotson's name
12 appears at the second page, the third listing
13 from the top. This confirms that the DFA 9-10
14 fund and SBBI-97 have overlapping directorates.
15 Page 15 confirms the ownership pattern of the
16 fund.
17

18 **Q. How do you know that investors in Dr. Andrews'**
19 **22 small companies would be unable to buy into**
20 **the DFA fund?**
21

22 A. My opinion is based on the data I gathered
23 about Dr. Andrews' companies. Schedule 25
24 column (6) shows the average value of the
25 holdings per shareholder for Dr. Andrews'
26 companies. The maximum value is \$53,171 and the
27 average value is \$28,195. The DFA fund's
28 initial investment is \$2 million, about 50 to
29 100 times larger than the values shown in
30 column (6). It is impossible for stockholders
31 of Dr. Andrews' companies to buy into the DFA
32 fund.
33

34 **Q. How do you know that the DFA fund included only**
35 **half of Dr. Andrews' small companies?**
36

37 A. I acquired DFA's annual reports for 1994 and
38 1996 and the company's SEC 10K filing for 1995.
39 Those reports list the companies in the fund.

1 Schedule 26 shows the results.

2
3 **Q. Is it your opinion that Dr. Andrews actually**
4 **used the 22 "small publicly held companies" to**
5 **estimate the equity returns of 14.3%?**
6

7 **A.** No, Dr. Andrews did not use those companies.
8 In my opinion he used the concept of "small
9 companies" to make a link with the purported
10 returns of the DFA fund, which is the real
11 source of the huge equity-return estimates that
12 appear in his direct testimony at the bottom of
13 page 45. Also, nine of Dr. Andrews' companies
14 do not fit the definition of a small company
15 that is given by SBBI-97 at page 136: A small
16 company is one with a market value less than
17 \$197.4 million as of September 1996. My
18 Schedule 25 shows 9 of Dr. Andrews' companies
19 exceeding that value on April 30, 1997. This
20 strongly suggests that Dr. Andrews' companies
21 are composed of two dissimilar groups that are
22 viewed differently by the market.
23

24 RETURNS OF 12.5% AND 12.17% ARE BASED ON LARGE COMPANY
25 DATA, MISUSE OF DATA AND IRREGULAR, UNSUPPORTED
26 PROCEDURES
27

28 **Q. Are Dr. Andrews' other returns derived from**
29 **the small company concept and the DFA fund?**
30

31 **A.** No. He uses large companies to derive the
32 returns of 12.5% and 12.17%. The returns appear
33 in his testimony at page 44 lines 21-22 and at
34 page 45 lines 1-2 and are derived from his
35 Schedule 10. The schedule's left side has a
36 column titled "Common Stock Total Returns."
37 This name is wrong. In his note at the bottom
38 of the schedule he says data for the years

1 1987-1995 is drawn from "Exhibit A-1" of
 2 Ibbotson's 1996 yearbook. The correct name is
 3 "Table A-1 Large Company Stocks: Total
 4 Returns." A portion of the table from the 1996
 5 yearbook is attached to my testimony as
 6 Schedule 27. Note the title of column (3) in my
 7 Schedule 11 and the exact match between the
 8 amounts in column (3) from 1988-1996 and the
 9 amounts listed in Dr. Andrews' so-called
 10 "Common Stock Total Returns."

11
 12 Contrary to his assertion, "I measure the costs
 13 of equity capital of ... small publicly held
 14 gas distributing companies," Dr. Andrews uses
 15 large companies without acknowledging the fact
 16 nor explaining why he has done so. This
 17 undermines his entire analysis, making it an
 18 irrational basis to determine a return to
 19 equity.
 20

21 **Q. Does Dr. Andrews use the data correctly?**

22
 23 A. No. He limits Schedule 10 to a history of 10
 24 years instead of a 71 year history recommended
 25 by SBBI-97.
 26

27 **Q. Are you suggesting that every recommendation of**
 28 **SBBI-97 has to be followed?**

29
 30 A. No. Although SBBI-97 is a useful tool and an
 31 authoritative source for some aspects of
 32 developing a rate of return, its authors are
 33 fallible, as I have already demonstrated with
 34 regard to the small company issue. However, it
 35 is contradictory to invoke an authoritative
 36 source to justify one position and then depart
 37 from the source's recommendations in other
 38 positions without explaining the reasons for
 39 the departure.

1 Dr. Andrews has departed from the standard
2 practice of using a 71 year history to derive
3 the risk premium differential. His direct
4 testimony offers neither a justification nor an
5 explanation of his reasoning. In their absence,
6 his choice of a 10 year history appears
7 arbitrary and calculated to increase the
8 estimated cost of equity.
9

10 For example, his Schedule 10, the line titled
11 "Averages" shows that: $.1604 - .0778 = .0826$.
12 These values appear in his direct
13 testimony at page 44 line 21:
14

$$15 K_e = .0133 + .0778 + (.41) * (.1604 - .0778)$$

$$16 K_e = .125 = 12.5\%$$

17
18
19 However, if Dr. Andrews had taken the data for
20 the 71 year period, as the source recommends,
21 the averages would be different than what he
22 shows in Schedule 10.
23

24 The figure of 16.04% would decrease to 12.7%,
25 which is the average return to large companies
26 and which is shown in my Schedule 11 at the
27 bottom of column 3. The figure of 7.78% would
28 decline to 5.2%, which is shown in my Schedule
29 14 in the line titled "Income Portion of Long-
30 Term Government Bonds" and under the column
31 titled "Biased Average." If these new figures
32 were applied to his equation at page 44 line
33 21, the new result would be:
34

$$35 K_e = .0133 + .052 + (.41) * (.127 - .052)$$

$$36 K_e = .0961 = 9.61\%$$

37
38
39 A similar result occurs in the equation at line
40 1 of page 45 of his direct testimony, where the

1 new value would be 9.31%.

2
3 The use of a 10 year history is vital to Dr.
4 Andrews' results. However, the exact reason he
5 chose this period is not discussed in his
6 testimony. Therefore, I recommend that the TRA
7 disregard the estimates of 12.5% and 12.17%
8 because they are arbitrary and unreasonable.
9

10 In fact, his formulation of the risk premium
11 model is irrational.
12

13 **Q. Why is his risk premium model irrational?**

14
15 A. Dr. Andrews' model is irrational because it is
16 not tied to the debt markets faced by AGL, the
17 "A" rated bond market, despite his lengthy
18 discussion of AGL's debt quality at page 18 of
19 his testimony. The only place in his analysis
20 where he uses "A" rated corporate debt is in a
21 DCF analysis appearing in his testimony at page
22 46 lines 16-17, which shows returns of 8.98%
23 and 9.35%. These figures are repeated at page
24 47 lines 7-8, where he describes these numbers
25 as "DCF Over Various Debt Instruments."
26

27 This portion of his testimony contradicts a
28 statement in his deposition of September 9. In
29 that deposition, from page 43 line 24 to page
30 44 line 3, he states: "One of the lines of
31 analysis that I pursue is the equity over debt
32 cost approach, risk premium approach; and I
33 used some of the costs of the debt that Atlanta
34 Gas had outstanding and found differentials of
35 equity cost over that." However, Dr. Andrews
36 has not used AGL's debt or "A" rated bonds in
37 any risk premium analysis, but only in the DCF
38 analysis he describes at pages 46 and 47 line 7
39 of his testimony. His highest set of returns --

14.23%, 14.38% and 14.39% derived from his small company analogy, and his second highest set of returns -- 12.5% and 12.17% -- are completely unrelated to the "A" bond market or to AGL's debt.

Q. Is your risk premium model rational?

A. Yes. My risk premium model is based on the general principle that equity returns have to be compared to and exceed corporate debt. In this particular case the debt in question is the "A" bond market. If I expressed the principle instead of the numbers, the model would be:

$$K_e = \text{Current Cost of A Rated Utility Bonds} + (R_m - R_f) * (B_e)$$

Dr. Andrews' model does not begin with corporate debt. Instead, his model begins with the concept of "Long-Term U.S. Govt. Bonds Income Component Returns." If I expressed his idea instead of the numbers, his model would look like:

$$K_e = 1.33\% + \text{Long-Term U.S. Govt. Bonds Income Component Returns} + (R_m - R_f) * (B_e)$$

Therefore, Dr. Andrews' model is based on the idea that equity returns have to be compared to and exceed the returns of long term government bonds instead of corporate debt. This is an irrational basis to begin an analysis because returns to government bonds are always lower than returns to corporate bonds. My Schedule 14 clearly shows that corporate bonds outperform government bonds. Therefore, Dr. Andrews' model

has a starting point that is bound to be lower than the starting point in my model. However, he raises the starting point of his model by resorting to a figure of 1.33%. This amount is not related to debt, corporate or government; nor is it related to equity returns of either large or small companies.

Q. What does the 1.33% relate to?

A. The figure is not related to anything because it is a nonsense-number.

Q. How is 1.33% a nonsense-number?

A. Dr. Andrews explains the derivation of 1.33% in his direct testimony, page 44 lines 13-14. The derivation is irrational for two reasons:

1. Dr. Andrews is dealing with numbers that cannot be treated as if they are "per day, per week, per month or per year" numbers. Just as the assertion - "You are 6 feet tall per month, so in 12 months you will be $6 \times 12 = 72$ feet tall per year" -- is nonsense, so too is Dr. Andrews' number of 1.33%.

This point becomes clear by examining his derivation of 1.33%. In his Schedule 9 under the "Alpha" column, there is a number, .0011, which is the average of the alphas that have a positive beta. Thus .0011 is the basis for deriving .0133 by the formula at page 44 lines 12-13 of Dr. Andrews' direct testimony:

$$.0133 = (1 + .0011)^{12} - 1$$

Although he does not say that he is deriving his alphas from five years of monthly data, he is. At page 42 lines 6-12 of his testimony Dr. Andrews explains that he derives his betas with five years of monthly data, but every time a statistical regression produces a beta an alpha is created too. This is why his work and mine both have alphas as well as betas.

He treats the value .0011 as if it were a monthly value that can be compounded into an annual figure. This is why he uses 12 in his formula:

$$.0133 = (1 + .0011)^{12} - 1$$

The alphas and betas are derived from the same data and the same months. If the alpha is a monthly rate, isn't the beta a monthly rate, too? If the beta is not a monthly rate, how can the alpha be a monthly rate? If his beta of .41 were compounded monthly the result would be:

$$60.75 = (1 + .41)^{12} - 1$$

If this value were placed into Dr. Andrews' original formula the cost of equity would be:

$$K_e = .0133 + .0778 + (60.75) * (.1604 - .0778)$$

$$K_e = 5.10 = 510\%$$

60.75 is produced in exactly the same way as Dr. Andrews' produced .0133. If

60.75 is dismissed as incredible or fictitious, then its counterpart, the "annualized" alpha, is an unreasonable number and .0133 should be rejected, too. Both numbers are unreasonable. It is irrational for Dr. Andrews to treat the alpha as a monthly figure that can be compounded to an annual one. His treatment further suggests that the alpha can be compounded according to the time frame of the data used, i.e., if the alpha and beta are derived from monthly data then the alpha can be compounded monthly, but if the data is weekly, then the alpha can be compounded weekly. This too is irrational.

For example, if I took the weight of 22 people each month for 60 months and then took an average, I can say "based on monthly data the average weight per person is 150 pounds" but it would be wrong to say "because I collected my data on a monthly basis each person weighs 150 pounds per month and 1800 pounds per year." This is the exact logic that Dr. Andrews employs. The difference between this example and Dr. Andrews' irrational procedure is the size of the numbers.

If the beta is .41, as in Dr. Andrews' results, then the value of the company's stock changes 41 cents per \$1 change in the market's value, whether the market's change is measured over a day, a week, a month or a year -- .41 is not compounded to

a higher figure nor reduced to a lower one. The same logic applies to the alpha.

In my opinion the TRA should disregard Dr. Andrews' figure of 1.33% because it is irrational.

2. Dr. Andrews' direct testimony does not provide any tests of statistical accuracy for the alphas in his Schedule 9. In the absence of this data, my opinion is that the alpha should be presumed to be zero.

Earlier I said that every time a statistical regression produces a beta a so-called "alpha" is created too. Since his overall positive beta is .41 while mine is .458, I expected this similarity to be carried through to the alphas, and it is. The values of his alphas are very close to zero, just as they are in my analysis, at Schedule 15 page 3. However, page 4 of Schedule 15 shows the alphas' statistical measures of accuracy, the T-statistics. They are tiny, meaning the alphas are no different than zero.

The typical pattern of alphas, betas and their statistical accuracy are provided in the table below.

Betas	Alphas
Positive Values	Very Close to Zero- May Be Positive or Negative

High T-Statistics Indicate Accuracy	Low T-Statistics Indicate Inaccuracy
--	---

Schedule 15 fits this pattern. Dr. Andrews' data should show the same pattern, at least for his positive betas.

When the alphas are no different than zero, they do not add anything to the cost of equity, and there is no need to use the alphas. In this case the formula looks like:

$$0 = (1 + .0000)^{12} - 1$$

The alpha is zero. This is why alphas are thought of as having no value and no meaningful economic interpretation and why they never appear with betas.

I do not know of any financial publication that provides betas and alphas nor do I know of any model that treats the alphas the way Dr. Andrews does.

Q. Did you ask Dr. Andrews to provide the tests of statistical significance for the alphas and betas that he calculated?

A. Yes. He did not supply them, consequently his conclusions are not supported by material and substantial evidence. His response is attached to my testimony as Schedule 28.

Q. Do you have any comment regarding his response?

1
2 A. Yes. Since Dr. Andrews has not provided the
3 tests of statistical significance, I am even
4 more concerned that his alphas are really no
5 different than zero. In my analysis the alphas
6 are zero and they are not statistically
7 significant. Also, it is contradictory for Dr.
8 Andrews to calculate sums and averages for the
9 betas and alphas, as he does in his Schedule 9,
10 and then state in his response: "Tests of
11 significance, such as T-statistics from the
12 regressions related to individual stocks cannot
13 be summed or averaged across the composite." I
14 have done exactly that in my analysis. In fact,
15 its results are appropriate.
16

17 Q. Why are your results appropriate?
18

19 A. All my betas are positive. They are estimated
20 over twelve contiguous 60 month periods, with
21 the first period ending in May 1996 and the
22 last one ending in April 1997. This procedure
23 captures any change in how the company's beta
24 value is responding to the market. I provide
25 tests of statistical significance, and the
26 tests are reasonable. The alphas are zero,
27 their tests of statistical significance
28 indicate the true values are zero, and they
29 play no role at all in my return. All of these
30 factors taken together reinforce the
31 implications of my Schedule 1, which
32 demonstrates the comparability of my group of
33 companies.
34

35 In comparison, Dr. Andrews' analysis has 5
36 negative betas, which he dismisses as
37 "analytically indefensible" at page 43 line 18
38 of his direct testimony. Dr. Andrews does not
39 explain why the results are "indefensible," but

1 it is clear that if he did not exclude the
 2 negative values, his estimated return of 12.5%
 3 would be lower. Therefore, the negative betas
 4 appear to be indefensible because they would
 5 lower the company's return. He relies on the
 6 alpha to raise his estimated returns and
 7 performs an irrational procedure to boost an
 8 estimated return by 1.33%. In addition, he
 9 does not provide tests of statistical
 10 significance, even when asked to do so. Taken
 11 together, these factors indicate that Dr.
 12 Andrews' companies do not form a comparable
 13 group that is a rational basis for estimating a
 14 rate of return. These factors further reinforce
 15 what my Schedules 25 and 26 already suggest --
 16 his companies are composed of two dissimilar
 17 groups that cannot be a rational basis to set a
 18 rate of return in this docket.

19
 20 **Q. What is your opinion regarding Dr. Andrews'**
 21 **statistical analysis is shown in Schedule 9 of**
 22 **his testimony?**

23
 24 **A.** In my opinion the TRA should disregard the
 25 conclusory analysis because it is arbitrary,
 26 irrational and unsupported by material and
 27 substantial evidence. Therefore, his analysis
 28 cannot constitute a basis for a decision.
 29

30
 31 DCF ANALYSIS IS BIASED UPWARDS

32
 33 **Q. What is your opinion of Dr. Andrews' DCF**
 34 **analysis?**

35
 36 **A.** His DCF recommendation of 11.06% is derived
 37 from Schedule 8, page 2, of his testimony. My
 38 opinion is that his result is biased upward by
 39 approximately 2% because his rate of 11.06% is

1 based on only 4 companies instead 21. He
 2 ignores the results of the 17 other companies
 3 that he considers as comparables. Therefore,
 4 his recommendation of 11.06% is not
 5 representative of the group that he has
 6 designated as comparables. On the other hand,
 7 if his companies are composed of two groups not
 8 comparable to each other, then his decision to
 9 ignore some would be rational. However, if this
 10 is why he has ignored 17 companies, then this
 11 makes all his other analyses irrational, too.
 12 For example, of the 17 companies ignored in
 13 Schedule 8, 12 of them are used in his Schedule
 14 9 to derive the returns of 12.5% and 12.17%. On
 15 its face this is clearly an irrational
 16 procedure, and Dr. Andrews offers no
 17 explanation. It is my opinion that the TRA
 18 should disregard his recommended DCF rate
 19 because it is biased and not supported by
 20 material and substantial evidence.

21
 22
 23 RANGE OF 11.5% TO 12.5% IS IRRATIONAL
 24

25 **Q. Do you have any concluding opinions regarding**
 26 **the equity returns suggested by the company's**
 27 **cost-of-capital witness?**

28
 29 A. Yes. In his direct testimony, at page 47 lines
 30 14 and 23, Dr. Andrews concludes his analysis
 31 by recommending a range of 11.5% to 12.5%. Dr.
 32 Andrews suggests this is a reasonable range
 33 because he has found returns that are well
 34 above the range. At page 47 lines 18-22 Dr.
 35 Andrews says "The Small Stock equity risk
 36 premiums...over 14%...cannot be dismissed."

37
 38 The "small company" premiums can and should be
 39 dismissed because:

1 They are based on 1 mutual fund out of
2 200;

3
4 The fund has a minimum investment
5 requirement of \$2 million;

6
7 The stockholders of Dr. Andrews'
8 companies cannot afford to buy into
9 such a fund;

10
11 The directorates of the Ibbotson
12 Associates and the DFA 9-10 fund
13 overlap - suggesting that the funds'
14 return is not calculated by an
15 independent source;

16
17 The fund's return on assets is only
18 8.75%, an amount provided by
19 Morningstar Inc., a source that is
20 independent of Ibbotson Associates and
21 DFA Investment Dimensions Group - the
22 manger of the DFA 9-10 fund;

23
24 The difference between the fund's
25 return on assets and its so-called
26 annual return means that a mutual
27 fund's return cannot and should not be
28 used to grant a utility's return on
29 assets;

30
31 The fund relies exclusively on capital
32 gains as the source of its return.

33
34 The small-company fund approach is an unfit and
35 irrational method to develop a rate of return
36 that must be supported by ratepayers.

37
38 The returns of 12.5% and 12.17%, both are
39 predicated on data that is specific to large

1 companies - not small ones. This invalidates
2 both returns because Dr. Andrews' analysis is
3 based on "small publicly held" companies. Also,
4 I have pointed to several places in the
5 derivation of 12.5% and 12.17%, where Dr.
6 Andrews is silent about the logic that led him
7 to perform crucial procedures or where the
8 procedure is irrational. Considering all these
9 factors, Dr. Andrews' recommended range of
10 11.5% to 12.5% emerges as irrational.
11

12 **Q. What is your opinion regarding Dr. Andrews'**
13 **returns of 14.39%, 14.38%, 14.23%, 12.5%,**
14 **12.17% and 11.06%?**
15

16 **A.** In my opinion, the returns of 14.39%, 14.38%,
17 14.23%, 12.5%, 12.17% and 11.06% are
18 unsubstantiated, speculative and more than just
19 and reasonable. They cannot be a basis for the
20 TRA to set the equity return in this docket.
21

22 **Q. How is your testimony different from that of**
23 **the company's cost-of-capital witness?**
24

25 **A.** In my opinion my testimony is different because
26 I have used reasonable methods and achieved
27 reasonable results. I have explained my methods
28 in pain-staking detail, giving all parties an
29 accurate and true description of all the
30 factors and sources I considered when forming
31 my opinion on the rate of return. Therefore,
32 the equity return of 10.55% is neither
33 confiscation nor extortion and is equitable to
34 ratepayers and the company alike.
35

36 **Q. Does this conclude your direct testimony?**
37

38 **A.** Yes.

Proof of Comparability

Market Statistics

NAME	Ratio of		Value of		Average	Market
	Market	Price to	Book	Equity	Dividend	Holdings
	Price:	Ratio:	Dec	Dec	Yield:	Per
	1996	1996	1996	1996	4/30/97	Holder
						Investor
AGL RESOURCES INC	180%	48.9%	5.40%	\$63,334	3.36	1061
BAY ST GAS CO	150%	53.1%	5.61%	\$30,949	3.86	343
BROOKLYN UN GAS CO	149%	55.8%	5.05%	\$42,951	2.26	1352
INDIANA ENERGY INC	184%	62.5%	4.49%	\$58,122	4.25	548
LACLEDE GAS CO	161%	57.1%	5.45%	\$35,410	3.98	388
NORTHWEST NAT GAS CO	159%	52.5%	5.05%	\$44,355	2.98	545
PEOPLES ENERGY CORP	171%	56.4%	5.42%	\$34,172	2.21	1167
PIEDMONT NAT GAS INC	178%	49.7%	4.84%	\$37,664	3.37	687
WASHINGTON GAS LT CO	174%	59.4%	5.19%	\$45,226	2.98	972
AVERAGE	166%	55.0%	5.50%	\$42,958	2.94	792

Financial Behavior

Companies Respond In Similar Way To Concerns Of The Financial Community

Value Line March 31, 1995:
"We advise staying with top
quality stocks with payout
ratios below 80%. We'd be
wary of payout ratios above
80%."

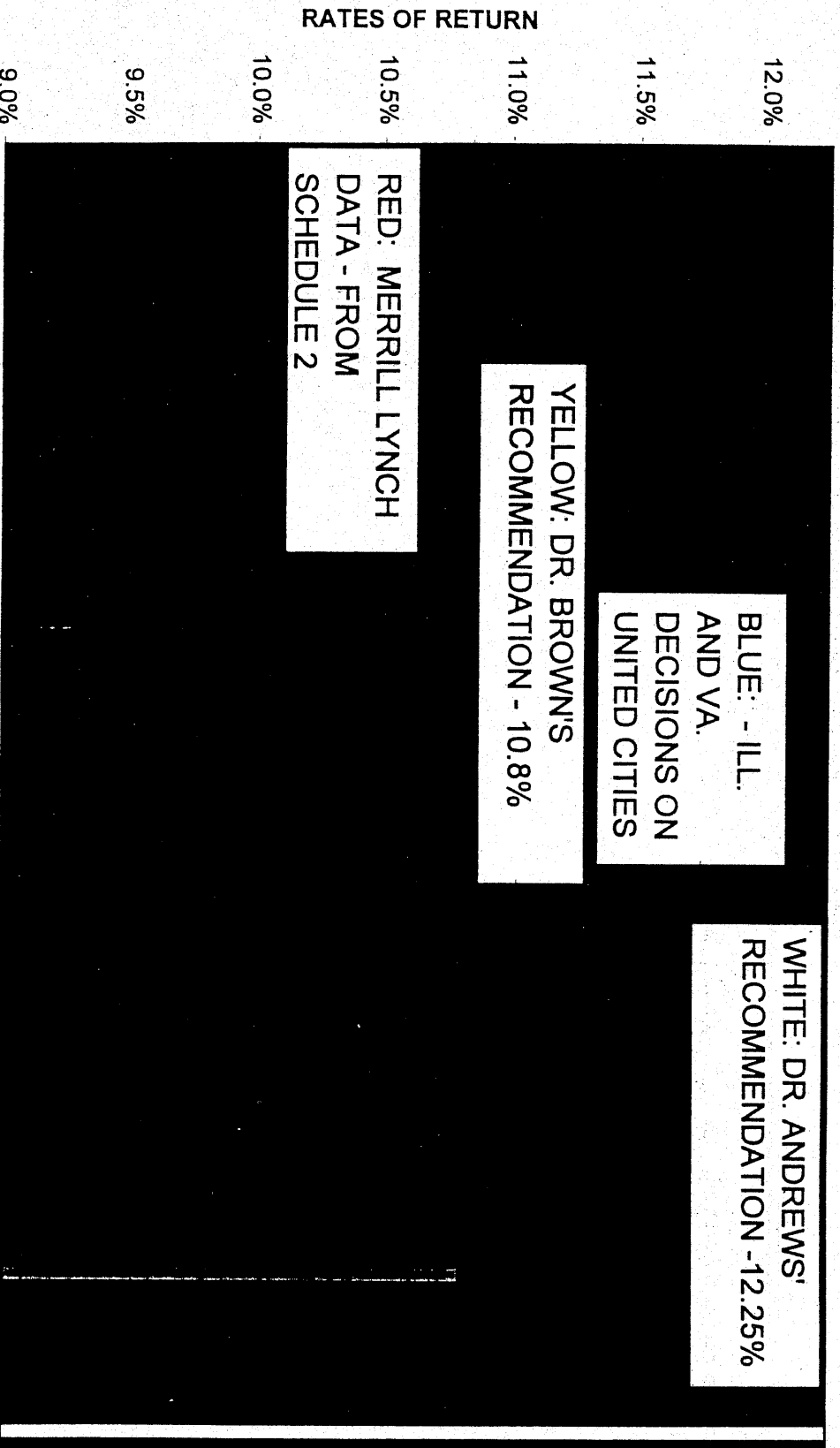
Dividends Payout Ratios As A Percent of Earnings:

	1991	1992	1993	1994	1995	1996
AGL RESOURCES INC	98.1%	91.2%	96.3%	88.9%	78.2%	77.4%
BAY ST GAS CO	99.2%	96.5%	80.0%	77.8%	86.5%	76.0%
BROOKLYN UN GAS CO	87.6%	95.6%	76.3%	73.0%	73.2%	72.4%
INDIANA ENERGY INC	82.9%	82.8%	77.3%	66.7%	73.3%	59.4%
LACLEDE GAS CO	93.8%	102.6%	75.8%	85.9%	97.6%	67.4%
NORTHWEST NAT GAS CO	167.3%	155.0%	67.0%	72.1%	73.1%	60.9%
PEOPLES ENERGY CORP	83.4%	85.4%	84.4%	84.5%	101.1%	61.8%
PIEDMONT NAT GAS INC	97.8%	65.0%	65.5%	74.8%	73.8%	68.9%
WASHINGTON GAS LT CO	92.1%	84.3%	83.2%	78.2%	77.2%	61.6%
AVERAGE	97.9%	97.9%	80.7%	80.1%	83.3%	66.7%

Chart 1

ESTIMATIONS OF REQUIRED RATES OF RETURN TO EQUITY FOR AGL'S SUBSIDIARY - CHATTANOOGA GAS

Docket No. 97-00982
Exhibit CA-SNB
Direct Testimony
Chart 1 of 3



Merrill Lynch Data

Docket No. 97-00982
Exhibit CA-SNB
Direct Testimony
Schedule 2
Page 1 of 1

MONTH	DCF RATE	RISK PREMIUM RATE	MAXIMUM OF THE TWO RATES
Jan-95	11.0%	10.4%	11.0%
Feb-95	10.6%	10.3%	10.6%
Mar-95	10.3%	10.2%	10.3%
Apr-95	10.2%	10.1%	10.2%
May-95	10.1%	10.0%	10.1%
Jun-95	10.1%	9.5%	10.1%
Jul-95	10.3%	9.3%	10.3%
Aug-95	10.5%	9.4%	10.5%
Sep-95	10.3%	9.3%	10.3%
Oct-95	10.3%	9.4%	10.3%
Nov-95	9.4%	9.6%	9.6%
Dec-95	9.8%	9.6%	9.8%
Jan-96	8.8%	9.2%	9.2%
Feb-96	8.8%	9.3%	9.3%
Mar-96	9.1%	9.3%	9.3%
Apr-96	9.9%	9.7%	9.9%
May-96	9.9%	9.6%	9.9%
Jun-96	10.0%	9.8%	10.0%
Jul-96	9.7%	9.7%	9.7%
Aug-96	10.0%	9.7%	10.0%
Sep-96	9.6%	9.9%	9.9%
Oct-96	9.6%	9.7%	9.7%
Nov-96	9.5%	9.5%	9.5%
Dec-96	10.4%	9.4%	10.4%
Jan-97	10.2%	10.6%	10.6%
Feb-97	10.2%	10.0%	10.2%
Mar-97	10.5%	10.1%	10.5%
Apr-97	10.5%	10.3%	10.5%
May-97	10.5%	10.1%	10.5%

Source: Merrill Lynch Quantitative Profiles: [Published Monthly]
January 1995 through May 1997 Issues, page 11.

i wish communication

[Click here](#)

United Cities granted rate increase in Illinois

03:24 p.m Jun 26, 1997 Eastern

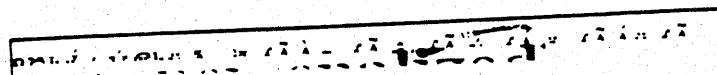
BRENTWOOD, Tenn.--(BUSINESS WIRE)--June 26, 1997--United Cities Gas Co., (NASDAQ:UCIT), a multistate distributor of natural and propane gas, announced today that the Illinois Commerce Commission has granted the company a rate increase of \$428,000 in annual revenues.

An overall rate increase of 2.09 percent was granted for approximately 23,000 customers in or near Harrisburg, Metropolis, Vandalia, Virden and Salem, Ill. The rate increase provides United Cities with a 9.85 percent return on rate base and a 10.94 percent return on common equity. The increase is the result of an application filed before the Commission in November 1996.

The net rate increase is part of an agreement reached by United Cities, Atmos Energy Corporation and the Commission in approving the merger of United Cities and Atmos. In addition, the rate increase will be followed by a three year rate moratorium.

United Cities Gas Company distributes natural and propane gas to approximately 350,000 customers in 10 states. The company is also engaged in other energy-related businesses. (See also: <http://www.businesswire.com>)

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United Cities granted rate increase in Virginia
05 03 p m Jun 02 1997 Eastern

BRENTWOOD Tenn --(BUSINESS WIRE)--June 2, 1997--United Cities Gas Co. (NASDAQ UCIT) a multistate distributor of natural and propane gas, announced today that the Virginia State Corporation Commission has granted the company a rate increase of \$102,838 in annual revenues by order dated May 27, 1997.

An overall rate increase of less than one percent was granted for approximately 18,000 current regulated customers. The rate increase provides United Cities with a 10 percent return on rate base and an 11 percent return on common equity. The increase is the result of an application filed before the Commission in April 1995.

Due to the Commission's decision, money over-collected from customers since Sept. 28, 1995, when United Cities began charging interim rates based on its original 3 percent rate increase request, will be credited to customers' accounts with interest. The credit amount for customers will vary according to their gas usage during the period interim rates were in effect.

United Cities' last rate increase in Virginia was granted in 1989. Since that time, rate reductions were implemented in both 1991 and 1994.

United Cities Gas Company distributes natural and propane gas to approximately 350,000 customers in 10 states. The company is also engaged in other energy-related businesses. (See also: <http://www.businesswire.com>)

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Effect of Monthly Compounding

	Monthly Net Income for Atlanta Gas- FY 1996 *	Monthly Income as a Percentage of Annual Income	Pattern of Monthly Return Based on Monthly Pattern of Income	Cumulative Equity Balance at Start of Month	Monthly Return on Equity	Cumulative Month End Equity Balance
			[col (3) X Allowed Annual Return of 10.55%]		[col (4) X col (5)]	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Oct-95	3,272	4.1%	0.43%	\$1,000	\$0.0043	\$1,004
Nov-95	9,492	11.8%	1.24%	\$1,004	\$0.0125	\$1,017
Dec-95	17,476	21.7%	2.29%	\$1,017	\$0.0232	\$1,040
Jan-96	18,120	22.5%	2.37%	\$1,040	\$0.0247	\$1,065
Feb-96	14,495	18.0%	1.90%	\$1,065	\$0.0202	\$1,085
Mar-96	13,797	17.1%	1.80%	\$1,085	\$0.0196	\$1,104
Apr-96	5,232	6.5%	0.68%	\$1,104	\$0.0076	\$1,112
May-96	0,836	1.0%	0.11%	\$1,112	\$0.0012	\$1,113
Jun-96	-1,122	-1.4%	-0.15%	\$1,113	-\$0.0016	\$1,112
Jul-96	2,226	2.8%	0.29%	\$1,112	\$0.0032	\$1,115
Aug-96	-0,253	-0.3%	-0.03%	\$1,115	-\$0.0004	\$1,114
Sep-96	-2,918	-3.6%	-0.38%	\$1,114	-\$0.0043	\$1,110
Total	80,653	100.0%	10.55%		\$0.1102	

*From CA Data Request 39

BEFORE THE TENNESSEE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

Docket No. 9502116

CHATTANOOGA GAS COMPANY

Tuesday, September 26, 1995
Hamilton County Board of Education
Chattanooga, Tennessee 37402

CROSS EXAMINATION OF DR. VICTOR L. ANDREWS

APPEARANCES:

COMMISSION MEMBERS:

Keith Bissell, Chairman,
Steve Hewlett and Sara Kyle

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COPY

1 dividends --

2 A Where are we?

3 Q I'm sorry, I've got the wrong page citations
4 here. You can tell me whether you remember saying this
5 or not. I can't find it through your testimony right
6 now. In the case of public utilities dividends paid
7 are constant for certain periods and are increased at
8 irregular intervals even though financial processes
9 underlying their movement may be progressing much more
10 smoothly and constantly; does that sound correct?

11 A I think I would say smoothly and
12 continuously, but whatever, but yes, that is true.

13 Q Do you agree --

14 A It's true as a general rule.

15 Q So you would agree that a public utility and
16 natural gas public utility, their financial activity is
17 basically smooth and continuous?

18 A Well, what I said, I think if we had the
19 complete quotation would be that earnings and cash
20 flows progress smoothly and continuously. Financial
21 processes occur smoothly and continuously. They go --
22 if this makes the point for you -- minute by minute,
23 hour by hour, day by day and they're not interruptable.

24 Q Just to clarify for the record we found the
25 first segment that we didn't really dispute. It starts

CAPITAL STRUCTURE SUBMITTED IN DOCKET 95-02116
AS EXHIBIT 3 SCHEDULE 9

Docket No. 97-00982
Exhibit CA-SNB____
Direct Testimony____
Schedule 8____
Page 1 of 1____

CHATTANOOGA GAS COMPANY
Cost of Capital
For the 12 Months Ending September 30, 1996

Line No		Amount	Ratio	Cost	Weighted Cost
1	Short Term Debt	5,190.953	5.36%	8.00%	0.43%
2	Long Term Debt	43,096.531	44.50%	7.96%	3.54%
3	Preferred Stock	4,183.753	4.32%	7.56%	0.33%
4	Common Stock Equity	44,374.900	45.82%	12.50%	5.73%
5	Total	96,846.137	100.00%		10.03%
		*****	*****		*****

DCF Recommended Return

DCF SUGGESTED RATE OF RETURN

Company	12/96: Annual Dividend	Average Daily closing Price: 5/1/96 - 4/30/97	Annual Dividend Yield
Atlanta Gas	\$1.06	\$19.63	5.40%
Bay State	\$1.52	\$27.08	5.61%
Brooklyn Union	\$1.42	\$28.14	5.05%
Indiana Energy	\$1.11	\$24.70	4.49%
LaClede	\$1.26	\$23.11	5.45%
Northwest Natural	\$1.20	\$23.77	5.05%
Peoples	\$1.83	\$33.79	5.42%
Piedmont	\$1.15	\$23.76	4.84%
Washington Gas Light	\$1.14	\$21.94	5.19%
Average Div. Yield 5.17%			
Actual	Year of AGL Dividend		
Value-Line Projection	1996		\$1.06
	2000		\$1.30

AGL DIVIDEND GROWTH RATE 5.23%

DCF Suggested Rate of Return 10.40%

Interest Rate History

History of A Rated Bonds

1992		1993		1994		1995		1996		1997	
Jan-92	8.72%	Jan-93	8.13%	Jan-94	7.24%	Jan-95	8.75%	Jan-96	7.09%	Jan-97	7.93%
Feb	8.63%	Feb	7.80%	Feb	7.45%	Feb	8.55%	Feb	7.31%	Feb	7.81%
Mar	8.69%	Mar	7.61%	Mar	7.82%	Mar	8.40%	Mar	7.75%	Mar	8.08%
Apr	8.67%	Apr	7.69%	Apr	8.20%	Apr	8.31%	Apr	7.90%	Apr	8.23%
May	8.81%	May	7.75%	May	8.37%	May	7.71%	May	8.20%	May	
Jun	8.70%	Jun	7.59%	Jun	8.30%	Jun	7.80%	Jun	8.13%	Jun	
Jul	8.84%	Jul	7.43%	Jul	8.45%	Jul	7.72%	Jul	8.07%	Jul	
Aug	8.65%	Aug	7.19%	Aug	8.38%	Aug	7.84%	Aug	7.87%	Aug	
Sep	8.02%	Sep	6.94%	Sep	8.62%	Sep	7.55%	Sep	8.06%	Sep	
Oct	8.84%	Oct	6.81%	Oct	8.80%	Oct	7.36%	Oct	7.83%	Oct	
Nov	8.58%	Nov	7.25%	Nov	8.85%	Nov	7.30%	Nov	7.54%	Nov	
Dec	8.37%	Dec	7.28%	Dec	8.78%	Dec	7.10%	Dec	7.63%	Dec	
Average:	8.727%	Average:	7.459%	Average:	8.276%	Average:	7.562%	Average:	7.782%	Average:	8.01%

Sources: Federal Reserve Bulletin, Table A26, Subtable 1.35, line 38
 Federal Reserve Publications H15(519) and G13(415)

Average:
 Most Recent
 12 Months
 7.948%

Risk Premium Data for Large Companies: 1925-1996

YEAR	Year-To-Year Percentage Change In		
	Large Company Total Return Index For Year	Large Company Total Return Index	
(1)	(2)	(3)	
1925	1.00		
1926	1.12	11.60%	
1927	1.54	37.54%	
1928	2.20	43.58%	
1929	2.02	-8.44%	
1930	1.52	-24.88%	
1931	0.86	-43.34%	
1932	0.79	-8.15%	
1933	1.21	53.87%	
.....	
.....	
.....	
1988	406.46	16.81%	
1989	534.46	31.49%	
1990	517.50	-3.17%	
1991	675.59	30.55%	
1992	727.41	7.67%	
1993	800.08	9.99%	
1994	810.54	1.31%	
1995	1113.92	37.43%	
1996	1370.95	23.07%	

If \$1 Were Invested in 1925 and the Investment Grew by 10.7% Every Year, the Result Would Be \$1370.95.

ACTUAL RETURN

10.7%

BIASED RETURN

12.7%

The Average Return, 12.7%, Says the Wealth Accumulated Since 1925 should be \$4768. This is Inaccurate.

*Source: Ibbotson Associates 1997 Yearbook:
Column (2) - From Table B-1
Column (3) - From Table A-1

The Probability Distribution For Returns 10 Large Company Stocks

The Table Below Shows The Odds In 1996 Of Achieving The Actual Return
 And The Biased Average Return From A \$1 Investment In 1925 In A Large Company

		ALL POSSIBLE VALUES OF INVESTMENT		ALL POSSIBLE RETURNS		ODDS OF ACHIEVING A RETURN EXACTLY EQUAL TO THE RETURN IN COLUMN (3)		ODDS OF ACHIEVING A RETURN LESS THAN THE RETURN IN COLUMN (3)		ODDS OF ACHIEVING A RETURN MORE THAN THE RETURN IN COLUMN (3)	
NUMBER OF POSSIBILITIES											
(1)	(2)	(3)	(4)	(5)	(6)						
1.0E+0	\$0.00	-8.3%	0%	0%	100%						
71.0E+0	\$0.00	-7.8%	0%	0%	100%						
2.5E+3	\$0.00	-7.3%	0%	0%	100%						
57.2E+3	\$0.01	-6.8%	0%	0%	100%						
46.2E+18	\$82	6.4%	2%	3%	95%						
68.5E+18	\$119	7.0%	3%	5%	92%						
95.8E+18	\$173	7.5%	4%	8%	88%						
126.8E+18	\$253	8.1%	5%	12%	83%						
158.5E+18	\$368	8.7%	7%	17%	76%						
187.3E+18	\$536	9.3%	8%	24%	68%						
209.3E+18	\$780	9.8%	9%	32%	59%						
221.3E+18	\$1,136	10.4%	9%	41%	50%						
ACTUAL RETURN		\$1,370.95		10.7%		50%		50%		50%	
221.3E+18	\$1,654	11.0%	9%	50%	41%						
209.3E+18	\$2,409	11.6%	9%	59%	32%						
187.3E+18	\$3,508	12.2%	8%	68%	24%						
BIASED AVERAGE		\$4,768.40		12.7%		75%		18%		18%	
158.5E+18	\$5,109	12.8%	7%	76%	17%						
126.8E+18	\$7,440	13.4%	5%	83%	12%						
95.8E+18	\$10,835	14.0%	4%	88%	8%						
68.5E+18	\$15,778	14.6%	3%	92%	5%						
46.2E+18	\$22,977	15.2%	2%	95%	3%						
29.4E+18	\$33,460	15.8%	1%	97%	2%						
17.6E+18	\$48,727	16.4%	1%	98%	1%						
10.0E+18	\$70,959	17.0%	0%	99%	0%						
1.0E+0	\$854,908,330	33.6%	0%	100%	0%						

Chart 2

THE CUMULATIVE PROBABILITY DISTRIBUTION FOR IBBOTSON'S RETURNS TO LARGE COMPANY STOCKS

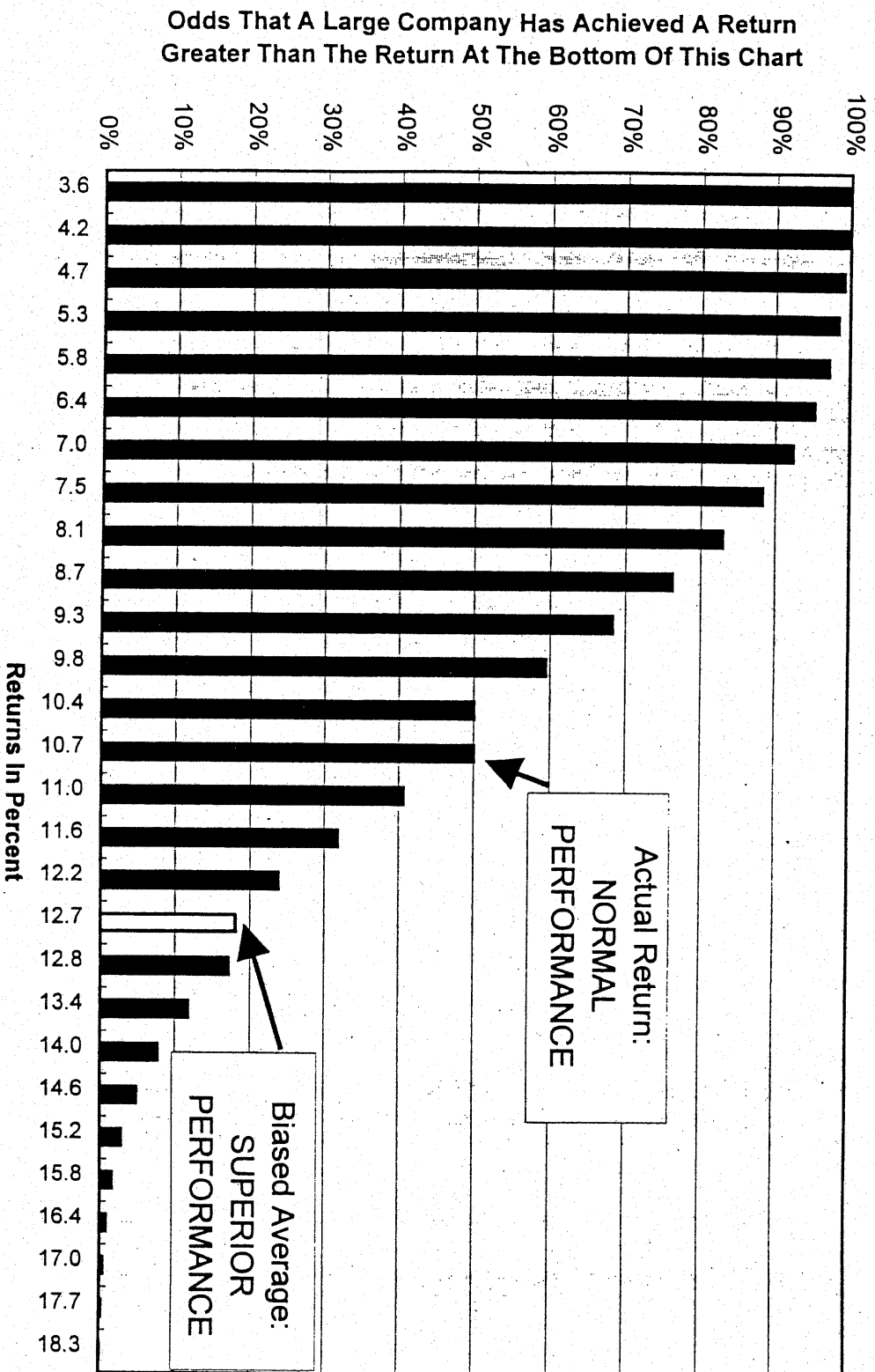
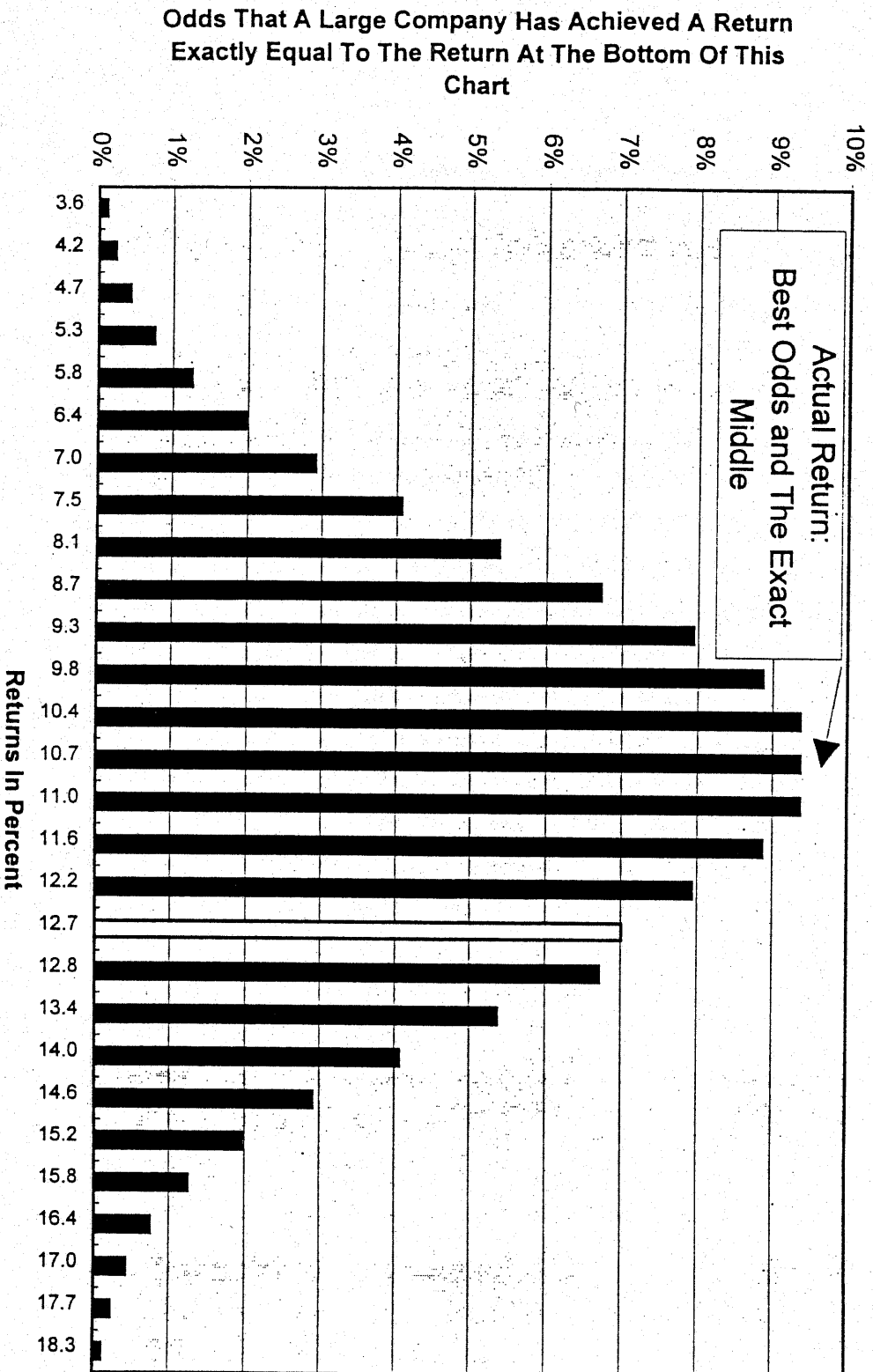


Chart 3

THE PROBABILITY DISTRIBUTION FOR IBBOTSON'S RETURNS TO LARGE COMPANY STOCKS



Risk Premium Data for 3-Month T-Bills: 1925-1996

YEAR	Year-To-Year			YEAR	Year-To-Year		
	T-Bill Total Return Index For Year	Percentage Change In T-Bill Total Return Index			T-Bill Total Return Index For Year	Percentage Change In T-Bill Total Return Index	
(1)	(2)	(3)		(4)	(5)	(6)	
1925	1.00000			1961	1.60400	2.10%	
1926	1.03300	3.30%		1962	1.64800	2.74%	
1927	1.06500	3.10%		1963	1.70000	3.16%	
1928	1.10300	3.57%		1964	1.76000	3.53%	
1929	1.15500	4.71%		1965	1.82900	3.92%	
1930	1.18300	2.42%		1966	1.91600	4.76%	
1931	1.19600	1.10%		1967	1.99700	4.23%	
1932	1.20700	0.92%		1968	2.10100	5.21%	
1933	1.21100	0.33%		1969	2.23900	6.57%	
1934	1.21300	0.17%		1970	2.38500	6.52%	
1935	1.21500	0.16%		1971	2.49000	4.40%	
1936	1.21700	0.16%		1972	2.58500	3.82%	
1937	1.22100	0.33%		1973	2.76400	6.92%	
1938	1.22100	0.00%		1974	2.98600	8.03%	
1939	1.22100	0.00%		1975	3.15900	5.79%	
1940	1.22100	0.00%		1976	3.31900	5.06%	
1941	1.22200	0.08%		1977	3.48900	5.12%	
1942	1.22500	0.25%		1978	3.74000	7.19%	
1943	1.22900	0.33%		1979	4.12800	10.37%	
1944	1.23300	0.33%		1980	4.59200	11.24%	
1945	1.23700	0.32%		1981	5.26700	14.70%	
1946	1.24200	0.40%		1982	5.82200	10.54%	
1947	1.24800	0.48%		1983	6.33500	8.81%	
1948	1.25800	0.80%		1984	6.95900	9.85%	
1949	1.27200	1.11%		1985	7.49600	7.72%	
1950	1.28700	1.18%		1986	7.95800	6.16%	
1951	1.30600	1.48%		1987	8.39300	5.47%	
1952	1.32800	1.68%		1988	8.92600	6.35%	
1953	1.35200	1.81%		1989	9.67300	8.37%	
1954	1.36400	0.89%		1990	10.42900	7.82%	
1955	1.38500	1.54%		1991	11.01200	5.59%	
1956	1.41900	2.45%		1992	11.39800	3.51%	
1957	1.46400	3.17%		1993	11.72800	2.90%	
1958	1.48600	1.50%		1994	12.18600	3.91%	
1959	1.53000	2.96%		1995	12.87000	5.61%	
1960	1.57100	2.68%		1996	13.54000	5.21%	

Actual Return	3.74%	3.79%	Average Return
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Source: Ibbotson Associates 1997 Yearbook:
 Column (2) - From Table B-5
 Column (3) - From Table A-14
 Column (5) - From Table B-5
 Column (6) - From Table A-14

Debt Instruments: Actual and Average Returns

Returns of Debt Instruments: 1925-1996

	Actual	Biased Average
Long-Term Corporate Bonds	5.60%	6.00%
Long-Term Government Bonds	5.10%	5.40%
Income Portion of Long-Term Government Bonds	5.10%	5.20%
Intermediate Term Government Bonds	5.20%	5.40%
U.S. Treasury Bills	3.70%	3.80%

*Source: Ibbotson Associates 1997 Yearbook: Page 118

Risk Premium Results

Docket No. 87-00982
 Exhibit CA-SNB
 Direct Testimony
 Schedule 15
 Page 1 of 4

RISK PREMIUM ANALYSIS: BETAS - FOR AGL AND COMPARABLE COMPANIES REGRESSED AGAINST S&P 500

BETA FOR 60 MONTH PERIOD ENDING	ATLANTA GAS LIGHT (ATG)	BAY ST GAS CO	BROOKLYN UN GAS CO	INDIANA ENERGY INC	LACLEDE GAS CO	NORTHWEST NAT GAS CO	PEOPLES ENERGY CORP	WASHINGTON GAS LT CO	PIEDMONT NATURAL GAS CO	AVERAGE FOR GROUP
May-96	0.532	0.448	0.490	0.087	0.169	0.289	0.764	0.441	0.389	0.401
Jun-96	0.568	0.397	0.456	0.075	0.170	0.198	0.758	0.430	0.392	0.382
Jul-96	0.584	0.422	0.539	0.171	0.141	0.166	0.785	0.300	0.474	0.398
Aug-96	0.590	0.422	0.561	0.178	0.154	0.168	0.806	0.308	0.470	0.406
Sep-96	0.519	0.416	0.618	0.170	0.205	0.156	0.781	0.328	0.438	0.404
Oct-96	0.545	0.429	0.623	0.171	0.189	0.185	0.785	0.329	0.440	0.411
Nov-96	0.520	0.428	0.703	0.272	0.198	0.100	0.773	0.333	0.515	0.427
Dec-96	0.517	0.521	0.866	0.450	0.323	0.287	0.977	0.437	0.479	0.540
Jan-97	0.433	0.387	0.731	0.481	0.364	0.358	0.915	0.422	0.417	0.502
Feb-97	0.439	0.395	0.735	0.475	0.366	0.361	0.912	0.425	0.418	0.503
Mar-97	0.488	0.386	0.717	0.503	0.427	0.311	0.886	0.404	0.347	0.497
Apr-97	0.506	0.383	0.677	0.464	0.463	0.318	0.858	0.394	0.342	0.490
AV: RECENT 12 MTHS	0.520	0.420	0.677	0.333	0.283	0.241	0.848	0.366	0.434	0.458

Risk Premium Results

Docket No. 97-00962
Exhibit CA-SNB
Direct Testimony
Schedule 15
Page 2 of 4

RISK PREMIUM ANALYSIS: T-STATISTICS OF BETAS - FOR AGL AND COMPARABLE COMPANIES REGRESSED AGAINST S&P 500

T-STATISTIC OF BETA FOR 60 MONTH PERIOD ENDING	ATLANTA GAS LIGHT (ATG)	BAY ST GAS CO	BROOKLYN UN GAS CO	INDIANA ENERGY INC	LACLEDE GAS CO	NORTHWEST NAT GAS CO	PEOPLES ENERGY CORP	WASHINGTON GAS LT CO	PIEDMONT NATURAL GAS CO	AVERAGE FOR GROUP
May-96	2.569	2.402	2.305	0.361	0.930	1.463	3.222	2.276	1.875	1.934
Jun-96	2.609	2.039	2.073	0.276	0.897	0.988	3.064	2.110	1.791	1.761
Jul-96	2.739	2.203	2.463	0.625	0.764	0.874	3.231	1.468	2.160	1.836
Aug-96	2.712	2.200	2.525	0.652	0.831	0.871	3.261	1.496	2.152	1.856
Sep-96	2.355	2.213	2.935	0.636	1.129	0.828	3.184	1.678	2.033	1.888
Oct-96	2.428	2.280	3.005	0.644	1.036	0.958	3.223	1.669	2.044	1.923
Nov-96	2.321	2.284	3.417	1.069	1.094	0.522	3.189	1.720	2.413	2.003
Dec-96	2.113	2.559	3.935	1.656	1.670	1.406	3.747	2.035	2.047	2.352
Jan-97	1.813	1.870	3.442	1.820	2.025	1.821	3.525	2.006	1.798	2.236
Feb-97	1.842	1.869	3.438	1.791	2.035	1.829	3.515	2.016	1.804	2.238
Mar-97	2.087	1.880	3.435	1.934	2.362	1.612	3.482	1.975	1.535	2.256
Apr-97	2.208	1.929	3.286	1.810	2.591	1.761	3.435	1.970	1.544	2.282

AV. RECENT 12 MTHS

2.316	2.129	3.188	1.264	1.554	1.248	3.379	1.805	1.953	2.093
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Risk Premium Results

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Page 3 of 4

RISK PREMIUM ANALYSIS: ALPHAS - FOR AGL AND COMPARABLE COMPANIES REGRESSED AGAINST S&P 500

ALPHA FOR 60 MONTH PERIOD ENDING	ATLANTA GAS LIGHT (ATG)	BAY ST GAS CO	BROOKLYN UN GAS CO	INDIANA ENERGY INC	LACLEDE GAS CO	NORTHWEST NAT GAS CO	PEOPLES ENERGY CORP	WASHINGTON GAS LT CO	PIEDMONT NATURAL GAS CO	AVERAGE FOR GROUP
May-95	-0.003	0.000	0.001	0.007	0.004	0.000	-0.003	0.002	0.004	0.001
Jun-95	-0.003	0.002	0.002	0.009	0.003	0.003	-0.002	0.003	0.005	0.002
Jul-95	-0.003	0.001	0.000	0.005	0.003	0.002	-0.003	0.005	0.002	0.001
Aug-95	-0.002	0.001	0.002	0.006	0.004	0.002	-0.002	0.005	0.002	0.001
Sep-95	-0.003	-0.001	-0.001	0.004	0.003	0.001	-0.003	0.003	0.002	0.001
Oct-95	-0.002	-0.001	-0.001	0.004	0.002	0.001	-0.003	0.003	0.002	0.001
Nov-95	-0.003	-0.001	-0.002	0.001	0.002	0.002	-0.004	0.003	0.001	0.001
Dec-95	-0.002	-0.001	-0.003	0.000	0.002	0.001	-0.005	0.001	0.001	0.000
Jan-96	-0.001	-0.002	-0.001	-0.001	0.000	0.000	-0.006	0.002	0.000	-0.001
Feb-96	-0.001	-0.002	-0.002	0.000	-0.001	-0.001	-0.006	0.001	0.000	-0.001
Mar-96	-0.003	-0.002	-0.001	0.000	-0.002	0.000	-0.005	0.002	0.002	-0.001
Apr-96	-0.002	-0.001	-0.001	0.000	-0.001	0.002	-0.005	0.002	0.002	-0.001
AV. RECENT 12 MTHS	-0.002	-0.001	-0.001	0.003	0.002	0.001	-0.004	0.003	0.002	0.000

Risk Premium Results

RISK PREMIUM ANALYSIS: T-STATISTICS OF ALPHAS - FOR AGL AND COMPARABLE COMPANIES REGRESSED AGAINST S&P 500

T-STATISTIC OF ALPHA FOR 60 MONTH PERIOD ENDING										
	ATLANTA GAS LIGHT (ATG)	BAY ST GAS CO	BROOKLYN UN GAS CO	INDIANA ENERGY INC	LACLEDE GAS CO	NORTHWEST NAT GAS CO	PEOPLES ENERGY CORP	WASHINGTON GAS LT CO	PIEDMONT NATURAL GAS CO	AVERAGE FOR GROUP
May-96	-0.452	-0.034	0.131	0.905	0.697	0.083	-0.447	0.337	0.577	0.200
Jun-96	-0.408	0.308	0.289	1.180	0.615	0.488	-0.324	0.508	0.705	0.373
Jul-96	-0.410	0.156	0.032	0.645	0.632	0.324	-0.486	0.822	0.335	0.228
Aug-96	-0.323	0.154	0.258	0.702	0.785	0.322	-0.287	0.902	0.302	0.313
Sep-96	-0.453	-0.118	-0.100	0.447	0.620	0.172	-0.381	0.466	0.346	0.111
Oct-96	-0.355	-0.111	-0.206	0.531	0.428	0.189	-0.437	0.473	0.360	0.097
Nov-96	-0.399	-0.098	-0.360	0.068	0.407	0.398	-0.487	0.439	0.215	0.019
Dec-96	-0.358	-0.216	-0.500	0.063	0.421	0.161	-0.717	0.152	0.082	-0.099
Jan-97	-0.191	-0.333	-0.207	-0.141	-0.050	-0.074	-0.822	0.270	0.067	-0.164
Feb-97	-0.189	-0.368	-0.310	0.036	-0.098	-0.165	-0.738	0.171	0.014	-0.183
Mar-97	-0.378	-0.290	-0.208	-0.040	-0.293	0.076	-0.659	0.309	0.313	-0.130
Apr-97	-0.344	-0.189	-0.229	-0.059	-0.269	0.278	-0.685	0.267	0.333	-0.100
AV. RECENT 12 MTHS	-0.355	-0.095	-0.117	0.361	0.325	0.189	-0.540	0.426	0.304	0.055

Risk Premium Suggested Rate Of Return

COMPANY	Debt Yield	Beta	Market Risk Premium = 10.7% - 3.7%	Company Risk Premium (d)=(b)X(c)	Company Equity Cost (e)=(a)+(d)
	(a)	(b)	(c)		(e)
AGL RESOURCES INC (HLDG CO)	7.95%	0.520	6.97%	3.62%	11.57%
BAY ST GAS CO	7.95%	0.420	6.97%	2.93%	10.88%
BROOKLYN UN GAS CO	7.95%	0.677	6.97%	4.72%	12.67%
INDIANA ENERGY INC	7.95%	0.333	6.97%	2.32%	10.27%
LACLEDE GAS CO	7.95%	0.283	6.97%	1.98%	9.92%
NORTHWEST NAT GAS CO	7.95%	0.241	6.97%	1.68%	9.63%
PEOPLES ENERGY CORP	7.95%	0.848	6.97%	5.91%	13.86%
WASHINGTON GAS LT CO	7.95%	0.368	6.97%	2.57%	10.51%
PIEDMONT NATURAL GAS CO	7.95%	0.434	6.97%	3.02%	10.97%
** Av of Comparable Cos.	7.95%	0.458	6.97%	0.032	11.14%

**Average Includes All Betas for All Companies Because the Average T-Statistics Are Greater Than 1. T-Statistics Are Shown In The Prior Schedule

Risk Premium Suggested Rate Of Return

11.14%

Any Model Relying on Ibbotson's Data Uses Monthly Compounding

Ibbotson's Annual Returns Are Based on Monthly Compounding

ROW	Month	Monthly Return	Monthly Return Relative to the Value "1" in the Year		Cumulative Return in the Year
			(1)	(2)*	(3)
					(4)
					(5)
					col (3) x prior entry in col (3)

1	1/1/96	3.44%	100.00%	103.44%	3.44%
2	2/1/96	0.96%	100.96%	104.43%	4.43%
3	3/1/96	0.96%	100.96%	105.44%	5.44%
4	4/1/96	1.47%	101.47%	106.99%	6.99%
5	5/1/96	2.58%	102.58%	109.75%	9.75%
6	6/1/96	0.41%	100.41%	110.20%	10.20%
7	7/1/96	-4.45%	95.55%	105.29%	5.29%
8	8/1/96	2.12%	102.12%	107.52%	7.52%
9	9/1/96	5.62%	105.62%	113.57%	13.57%
10	10/1/96	2.74%	102.74%	116.68%	16.68%
11	11/1/96	7.59%	107.59%	125.53%	25.53%
12	12/1/96	-1.96%	98.04%	123.07%	23.07%

*Source: Ibbotson Associates 1997 Yearbook: Page 181, Table A-1 for 1996

CHATTANOOGA GAS COMPANY

Office of the Consumer Advocate Interrogatory/Data Request - June 4, 1997

Item 42

42. Q. With regard to Exhibit 5 Schedule 9 of the company's filing, show the calculations and provide the data used to develop the figures shown under the column headings "Amount", "Ratio" and "Cost".

A. See attached documentation.

AGL Resources
 Projected Capitalization Ratios

	1997	1998	Average	Ratio
Short Term Debt	69,620	81,537	75,579	5.28%
Long Term Debt	659,500	659,500	659,500	46.07%
Preferred Stock	58,469	70,090	64,280	4.49%
Common Stock Equity	619,302	644,902	632,102	44.16%
	1,406,891	1,456,029	1,431,461	100.00%

Chattanooga Gas Company
 Test Year Projected Capitalization

	Ratio	Amount
Short Term Debt	5.28%	5,060,518
Long Term Debt	46.07%	44,154,936
Preferred Stock	4.49%	4,303,357
Common Stock Equity	44.16%	42,324,333
	100.00%	95,843,144

AGL Resources
 Projected Cost of Capital Components

Long Term Debt	
Projected Balance	659,500,000
Less: Unamortized Loss on Repurchase	1,585,136
Less: Unamortized Debt Discount & Expense	3,702,500
Net Projected Balance	654,212,364
Projected Interest Cost	50,730,000
Projected Cost Rate	7.75%
Short Term Debt	
Projected Average Monthly Balance	49,900,000
Projected Interest Cost	2,892,000
Projected Cost Rate	5.80%
Preferred Stock	
Projected Balance	64,280,000
Projected Dividend Accrual	4,525,000
Projected Cost Rate	7.04%
Common Stock Equity	
Projected Cost Rate	12.25%
See Cost of Equity Testimony & Exhibits	

Recommended Over All Return

Docket No. 97-00982
Exhibit CA-SNB _____
Direct Testimony _____
Schedule 19 _____
Page 1 of 1 _____

	Ratio	Cost	Weighted Cost
1 Short-Term Debt	5.28%	5.80%	0.31%
2 Long-Term Debt	46.07%	7.75%	3.57%
3 Preferred Stock	4.49%	7.04%	0.32%
4 Common Equity	44.16%	10.55%	4.66%
5 Total	100.00%		8.85%

Data on Mutual Funds Specializing in Small Company Stocks; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
Standish Small Cap Equity	Small Company	SDSCX	Closed	9.51	17.36
T. Rowe Price Small-Cap Val	Small Company	PRSVX	Closed	10.36	24.61
MAS Small Cap Value	Small Company	MPSCX	Closed	9.47	35.15
Montgomery Small Cap R	Small Company	MNSCX	Closed	12.11	18.69
MFS Aggr Small Cap Eq A	Small Company	MASCX	Closed	14.24	15.45
Artisan Small Cap	Small Company	ARTSX	Closed	10.68	11.86
Pioneer Small Company A	Small Company	PSCFX	Closed	5.07	24.15
Pioneer Small Company B	Small Company	PBSCX	Closed	5.07	23.21
Pioneer Small Company C	Small Company	PCSCX	Closed	5.07	n/a
PIMCo Small Cap Growth Instl	Small Company	PSCIX	Closed	11.07	16.83
GMO Small Cap Value III	Growth	GMSVX	\$35,000,000	0	20.16
UAM ICM Small Company	Small Company	ICSCX	\$5,000,000	8.89	23.01
Benchmark Small Co Index A	Small Company	BSCAX	\$5,000,000	9.37	15.97
Bear Stearns Small Cap Val Y	Small Company	BSVYX	\$2,500,000	7.57	15.87
DFA U.S. United Kingdom Small Co	Europe Stock	DFUKX	\$2,000,000	19.98	29.81
DFA U.S. Small Cap Value	Small Company	DFSVX	\$2,000,000	7.01	22.33
DFA Japanese Small Company	Pacific Stock	DFJSX	\$2,000,000	4.35	-22.78
DFA Pacific Rim Small Company	Pacific Stock	DFRSX	\$2,000,000	25.72	14.36
DFA Continental Small Company	Europe Stock	DFCSX	\$2,000,000	14.28	14.32
DFA U.S. 6-10 Small Company	Small Company	DFSTX	\$2,000,000	9.11	17.68
DFA U.S. 9-10 Small Company	Small Company	DFSCX	\$2,000,000	8.75	17.65
DFA Intl Small Cap Value	Foreign Stock	DISVX	\$2,000,000	10.57	0.95
Lazard Small Cap Instl	Small Company	LZSCX	\$1,000,000	8.3	23.93
JPM Instl U.S. Small Company	Small Company	JUSSX	\$1,000,000	9.6	20.84
Crabbe Huson Small Cap Instl	Small Company	CHISX	\$1,000,000	3.97	n/a
Lazard Intl Small Cap Instl	Foreign Stock	LZISX	\$1,000,000	16.2	15.65
ITT Hartford Small Company Y	Small Company	n/a	\$1,000,000	0	n/a
Enterprise Small Co Value Y	Small Company	EIGYX	\$1,000,000	7.81	11.83
Munder Small Company Grth Y	Small Company	MULYX	\$500,000	11.25	37.17
Compass Small Cap Grth Instl	Small Company	PSGIX	\$500,000	11.64	31.58
Compass Small Cap Val Instl	Small Company	PNSEX	\$500,000	8.25	19.87
Nations Small Cap Gr Prim A	Small Company	PSCPX	\$500,000	9.34	20.72
TCW Galileo Small Cap Growth	Small Company	n/a	\$250,000	10.8	17.54
Emerald Small Cap Instl	Small Company	EMSCX	\$250,000	10.14	10.69
Hancock Small Cap Equity	Small Company	n/a	\$250,000	12.49	13.48
PIMCo Small Cap Value Instl	Small Company	PSVIX	\$200,000	9.19	27.72
PIMCo Small Cap Value Admin	Small Company	n/a	\$200,000	9.19	27.37
PIMCo Small Cap Growth Admin	Small Company	n/a	\$200,000	11.41	16.71
JPM Pierpont U.S. Small Co	Small Company	PPCAX	\$100,000	9.63	20.75
Parkstone Small Cap Instl	Small Company	PKSCX	\$100,000	11.45	27.7

Data on Mutual Funds Specializing in Small Company Stocks; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
Standish Small Cap Tax-Sen	Small Company	SDCEX	\$100,000	11.06	21.23
Turner Small Cap Equity	Small Company	TSCEX	\$100,000	11.24	28.85
Avesta Small Capitalization	Small Company	n/a	\$100,000	10.78	30.95
Berger Small Cap Value Inst	Small Company	OMNIX	\$100,000	8.28	25.6
Kent Small Co Growth Inst	Small Company	KNEEX	\$100,000	8.95	19.61
SEI Inst Small Cap Growth A	Small Company	SSCGX	\$100,000	10.96	19.14
SEI Inst Small Cap Growth A	Small Company	SSCGX	\$100,000	10.96	19.14
59 Wall St Small Company	Small Company	FNSMX	\$100,000	10.42	19.12
SEI Inst Small Cap Value A	Small Company	SESVX	\$100,000	8	22.13
DLB Global Small Cap	World Stock	DLBSX	\$100,000	15.07	9.85
Pictet Intl Small Companies	Foreign Stock	PTSCX	\$100,000	14.65	n/a
Rainier Small/Mid Cap Equity	Growth	RIMSX	\$25,000	9.37	22.56
Glenmede Small Cap Equity	Small Company	GTCSX	\$25,000	9.33	25.1
Target Small Cap Value	Small Company	TASVX	\$25,000	9.17	21.84
Target Small Cap Growth	Small Company	TASGX	\$25,000	12.36	18.88
Schroder Small Cap	Small Company	WSCVX	\$25,000	8.92	23.91
UAM FMA Small Company	Small Company	FMACX	\$25,000	8.52	26.2
Quaker Small-Cap Value	Small Company	n/a	\$25,000	0	n/a
Hotchkis & Wiley Small Cap	Small Company	HWSCX	\$10,000	9.34	14.27
Longleaf Partners Small-Cap	Small Company	LLSCX	\$10,000	8.12	30.64
LKCM Small Cap Equity	Small Company	LKSCX	\$10,000	8.61	26.95
LKCM Small Cap Equity	Small Company	LKSCX	\$10,000	8.61	26.95
CRM Small Cap Value	Small Company	CRMSX	\$10,000	5.46	38.95
RCM Small Cap	Small Company	n/a	\$10,000	9.71	34.41
Brazos/JMIC Small Cap Growth	Small Company	BUSCX	\$10,000	0	n/a
Stratton Small-Cap Yield	Small Company	STSCX	\$5,000	9.7	14.97
Compass Small Cap Grth Svc	Small Company	PCGEX	\$5,000	11.64	31.39
Compass Small Cap Val Svc	Small Company	PSESX	\$5,000	8.25	19.56
Prudential Small Companies C	Small Company	n/a	\$5,000	9.09	22.97
Tocqueville Small Cap Val A	Small Company	TSCVX	\$5,000	9.78	25.03
PBHG Strategic Small Co PBHG	Small Company	PSSCX	\$5,000	0	n/a
Vanguard Index Small Cap Slt	Small Company	NAESX	\$3,000	9.32	18.12
Galaxy II Small Co Index Ret	Small Company	ISCIJ	\$2,500	10.27	19.66
Vista Small Cap Equity A	Small Company	VSEAX	\$2,500	10.4	28.8
Vista Small Cap Equity B	Small Company	VSEBX	\$2,500	10.4	27.93
T. Rowe Price Small Cap Slt	Small Company	OTCFX	\$2,500	10.41	21.05
Dreyfus Small Company Value	Small Company	DSCVX	\$2,500	7.65	34.15
Galaxy Small Co Equity Ret A	Small Company	GASEX	\$2,500	11.05	20.84
BT Investment Small Cap	Small Company	BTSCX	\$2,500	11.18	6.9
Scudder Small Company Value	Small Company	SCSUX	\$2,500	8.61	23.84

Data on Mutual Funds Specializing in Small Company Stocks; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
Warburg Pincus Small Val Com	Small Company	WPSVX	\$2,500	8.52	56.2
Galaxy Small Cap Value Ret A	Small Company	SSCEX	\$2,500	9.21	26.84
Fidelity Small Cap Stock	Small Company	FDSCX	\$2,500	11.18	13.63
Northern Small Cap	Small Company	NOSGX	\$2,500	6.92	18.93
Strong Small Cap	Small Company	SCAPX	\$2,500	10.12	22.7
Fidelity Japan Small Co	Pacific Stock	FJSCX	\$2,500	7.67	-24.59
PIC Small Cap Growth	Small Company	PISCX	\$2,000	11.78	18.2
Bridgeway Ultra-Small Co	Small Company	BRUSX	\$2,000	10.44	29.74
Sit Small Cap Growth	Small Company	SSMGX	\$2,000	12.65	14.97
AARP Small Company Stock	Small Company	ASCSX	\$2,000	0	n/a
Columbia Small Cap	Small Company	CMSCX	\$2,000	9	n/a
FBR Small Cap Financial	Sp.-Financial	n/a	\$2,000	8	n/a
FBR Small Cap Growth/Value	Small Company	n/a	\$2,000	16.61	n/a
Crabbe Huson Small Cap Prim	Small Company	CHSCX	\$2,000	3.97	n/a
Rembrandt Small Cap Inv	Small Company	n/a	\$2,000	13.9	19.18
Clover Capital Small Cap Val	Small Company	n/a	\$2,000	5.92	n/a
Fremont Intl Small Cap	Foreign Stock	FRISX	\$2,000	11.81	12.15
Berger Small Company Growth	Small Company	BESCX	\$2,000	11.14	16.77
Federated Small Cap Strat B	Small Company	SMCBX	\$1,500	13.04	34.16
Federated Small Cap Strat C	Small Company	SMCCX	\$1,500	13.04	33.99
Federated Intl Small Co B	Foreign Stock	ISCBX	\$1,500	13.73	n/a
Federated Intl Small Co C	Foreign Stock	ISCCX	\$1,500	13.73	n/a
Norwest Advant Small Co Gr I	Small Company	NVSCX	\$1,000	8.48	19.82
Colonial Small Cap Value A	Small Company	CSMIX	\$1,000	11.02	18.35
Colonial Small Cap Value B	Small Company	CSSBX	\$1,000	11.02	17.84
Heritage Small Cap Stock A	Small Company	HRSCX	\$1,000	11.71	27.46
Parkstone Small Cap Inv A	Small Company	PKSAX	\$1,000	11.45	27.59
Heritage Small Cap Stock C	Small Company	HSCCX	\$1,000	11.71	26.45
Parkstone Small Cap Inv C	Small Company	n/a	\$1,000	11.45	26.24
Parkstone Small Cap Inv B	Small Company	PKSBX	\$1,000	11.45	26.62
Westcore Small-Cap Opport	Small Company	WTSCX	\$1,000	8.28	25.58
Goldman Sachs Small Cap Eq A	Small Company	GSSMX	\$1,000	6.13	21.84
Goldman Sachs Small Cap Eq B	Small Company	GSQBX	\$1,000	6.13	n/a
Gabelli Small Cap Growth	Small Company	GABSX	\$1,000	7.54	11.88
Accessor Small to Mid Cap	Small Company	ASMCX	\$1,000	11.8	24.74
Munder Small Company Grh A	Small Company	MULAX	\$1,000	11.25	36.83
Norwest Advant Small Cap I	Small Company	NVSOX	\$1,000	0	n/a
Munder Small Company Grh C	Small Company	n/a	\$1,000	11.25	36.23
Munder Small Company Grh B	Small Company	MULBX	\$1,000	11.25	35.9
Kemper-Dreman Small Cap A	Small Company	KDSAX	\$1,000	8.94	29.6

Data on Mutual Funds Specializing in Small Company Stocks; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
ESC Strategic Small Cap A	Small Company	ESCA	\$1,000	9.67	27.43
Kemper-Dreman Small Cap C	Small Company	KDSC	\$1,000	10	29.94
Kemper-Dreman Small Cap B	Small Company	KDSB	\$1,000	8.94	28.54
ESC Strategic Small Cap D	Small Company	ESCD	\$1,000	9.67	26.83
SSGA Small Cap	Small Company	SVSC	\$1,000	11.43	28.79
Bear Stearns Small Cap Val A	Small Company	BSVAX	\$1,000	7.57	15.43
Bear Stearns Small Cap Val C	Small Company	BSVCX	\$1,000	7.57	14.83
BB&T Small Company Growth A	Small Company	BBBSX	\$1,000	11.59	30.77
BB&T Small Company Growth B	Small Company	n/a	\$1,000	11.59	30.98
Montgomery Intl Small Cap R	Foreign Stock	MNISX	\$1,000	23.45	14.97
Oakmark Small Cap	Small Company	OAKSX	\$1,000	8.82	39.79
Kent Small Co Growth Invmt	Small Company	KNEMX	\$1,000	8.95	19.15
TCW/DW Small Cap Growth	Small Company	TCSCX	\$1,000	11.33	13.71
Invesco European Small Co	Europe Stock	IVECX	\$1,000	21.04	31.03
Harris Ins Small-Cap Instl	Small Company	HSCIX	\$1,000	10.57	n/a
Harris Ins Small-Cap A	Small Company	n/a	\$1,000	10.57	n/a
HSBC Small Cap	Small Company	MSCFX	\$1,000	11.9	15.29
Prudential Small Companies A	Small Company	PGOAX	\$1,000	9.09	23.92
Schwab Small Cap Index	Small Company	SWSMX	\$1,000	9.72	15.49
SEI Instl Small Cap Growth D	Small Company	n/a	\$1,000	10.96	18.75
PIMCo Small Cap Value A	Small Company	PCVAX	\$1,000	0	n/a
PIMCo Small Cap Value B	Small Company	PCVBX	\$1,000	0	n/a
PIMCo Small Cap Value C	Small Company	PCVCX	\$1,000	0	n/a
Pegasus Small Cap Opport I	Growth	PSOPX	\$1,000	10.56	25.63
Pegasus Small Cap Opport A	Growth	n/a	\$1,000	10.56	24.59
Pegasus Small Cap Opport B	Growth	n/a	\$1,000	10.56	24.42
Prudential Small Companies B	Small Company	CHNDX	\$1,000	9.09	22.97
Evergreen Small Cap Eq Inc Y	Small Company	ESCEX	\$1,000	11.29	22.38
Value Line Small-Cap Growth	Small Company	VLSCX	\$1,000	11.24	10.35
Evergreen Small Cap Eq Inc A	Small Company	n/a	\$1,000	11.29	22.01
Evergreen Small Cap Eq Inc B	Small Company	n/a	\$1,000	11.29	21.1
Evergreen Small Cap Eq Inc C	Small Company	n/a	\$1,000	11.29	21.1
Norwest Advant Small Co Sika	Small Company	NCSAX	\$1,000	12.77	25.98
Norwest Advant Small Co Siki	Small Company	NSCTX	\$1,000	12.77	26.03
Norwest Advant Small Co Sika	Small Company	NCSBX	\$1,000	12.77	24.91
Arch Small Cap Equity Inv A	Small Company	EMGRX	\$1,000	9.87	10.5
Invesco Small Company Value	Small Company	IDSCX	\$1,000	9.18	12.46
Preferred Small Cap	Small Company	PSMCX	\$1,000	11.78	20.46
Heartland Small Cap Contrar	Small Company	HRSMX	\$1,000	10	18.86
Arch Small Cap Equity Inv B	Small Company	n/a	\$1,000	9.87	9.82

Data on Mutual Funds Specializing in Small Company Stocks; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
North American Small/Mid A	Growth	NSMAX	\$1,000	11.94	n/a
North American Small/Mid C	Growth	NSMCX	\$1,000	11.94	n/a
North American Small/Mid B	Growth	NSMBX	\$1,000	11.94	n/a
Aetna Small Company Sel	Small Company	AESGX	\$1,000	10.1	13.62
Gateway Small Cap Index	Small Company	GSCIX	\$1,000	9.13	17.04
Invesco Small Company Growth	Small Company	FIEXG	\$1,000	12.21	11.62
Aetna Small Company Adv	Small Company	AESAX	\$1,000	10.1	12.79
Safeco Small Co Stock NoLoad	Small Company	SFSCX	\$1,000	8.08	n/a
PaineWebber Small Cap A	Small Company	PSCAX	\$1,000	10.94	17.16
Eastcliff Regional Small Cap	Small Company	EARSX	\$1,000	10.12	n/a
PaineWebber Small Cap B	Small Company	PSCBX	\$1,000	10.94	16.2
PaineWebber Small Cap C	Small Company	PSCDX	\$1,000	10.94	16.22
AAL Small Cap Stock A	Small Company	AASMX	\$1,000	9.21	n/a
ITT Hartford Small Company A	Small Company	IHSAX	\$1,000	11.36	n/a
ITT Hartford Small Company B	Small Company	n/a	\$1,000	0	n/a
Marshall Small-Cap Growth	Small Company	MRSCX	\$1,000	0	n/a
Emerald Small Cap Ret	Small Company	n/a	\$1,000	10.14	10.05
Keystone Small Co Grth II A	Small Company	KSGAX	\$1,000	10.34	n/a
Keystone Small Co Grth II B	Small Company	KSGBX	\$1,000	10.34	n/a
Keystone Small Co Grth II C	Small Company	KSGCX	\$1,000	10.34	n/a
Dean Witter Intl Small Cap	Foreign Stock	DWISX	\$1,000	21.66	1.01
Keystone Small Co Grth (S-4)	Aggressive Growth	KSFOX	\$1,000	12.67	0.82
Enterprise Small Co Value A	Small Company	ENSPX	\$1,000	7.81	11.28
Kemper Small Cap Equity A	Small Company	KSCAX	\$1,000	10.41	14.09
Enterprise Small Co Value B	Small Company	ESCBX	\$1,000	10.41	10.77
Kemper Small Cap Equity B	Small Company	KSCBX	\$1,000	10.41	12.84
Kemper Small Cap Equity C	Small Company	KSCCX	\$1,000	10.41	12.86
Sentinel Small Company A	Small Company	SAGWX	\$1,000	10.49	21.3
Sentinel Small Company B	Small Company	n/a	\$1,000	10.49	n/a
SunAmerica Small Co Grth A	Small Company	SEGAX	\$500	10.23	14.92
SunAmerica Small Co Grth B	Small Company	SEGBX	\$500	10.23	14.12
Compass Small Cap Grth Inv A	Small Company	CSGEX	\$500	11.64	31.13
Compass Small Cap Val Inv A	Small Company	PSEIX	\$500	8.25	19.34
Phoenix Small Cap A	Small Company	PHSAX	\$500	12.38	29.96
Federated Small Cap Strat A	Small Company	SMCAX	\$500	13.04	35.04
Qualinvest Small Comps Val A	Small Company	QSVAX	\$500	9.89	20.07
Phoenix Small Cap B	Small Company	PHSCX	\$500	12.38	28.93
Qualinvest Small Comps Val C	Small Company	n/a	\$500	9.89	19.35
RIMCo Monument Small Cap Eq	Small Company	RISCX	\$500	10.1	21.92
Federated Intl Small Co A	Foreign Stock	ISCAx	\$500	13.73	n/a

Data on Mutual Funds Specializing in Small Company Stocks; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
ONE Fund Small Cap	Small Company	n/a	\$500	9.34	17.01
GT Global Amer Small Cap Adv	Small Company	n/a	\$500	8.85	14.22
GT Global Amer Small Cap A	Small Company	GTSAX	\$500	8.85	13.81
GT Global Amer Small Cap B	Small Company	GTSBX	\$500	8.85	13.14
First Omaha Small Cap Value	Small Company	n/a	\$500	8.52	n/a
Alger Small Capitalization A	Small Company	n/a	\$500	12.59	n/a
Alger Small Capitalization B	Small Company	ALSCX	\$500	12.59	4.17
Winthrop Small Company Val A	Small Company	WFAGX	\$250	9.6	14.58
Keeley Small Cap Value	Small Company	KSCVX	\$250	7.83	25.99
Piper Small Company Growth A	Small Company	PJSCX	\$250	9.2	11.65
Franklin Small Cap Grth I	Small Company	FRSGX	\$100	10.31	27.07
Franklin Small Cap Grth II	Small Company	FRSIX	\$100	10.31	26.07
Templeton Global Small Co I	World Stock	TEMGX	\$100	18	22.09
Templeton Global Small Co II	World Stock	TESGX	\$100	18	21.35
Munder Small Company Grth K	Small Company	MULKX	\$0	11.25	36.89
Landmark Small Cap Equity A	Small Company	LSCEX	\$0	9.44	37.8
Alger Small Cap Retirement	Small Company	ALSRX	\$0	12.02	14.83
Galaxy Small Co Equity Tr	Small Company	GSETX	\$0	11.05	21.59
BB&T Small Company Growth Tr	Small Company	BBCGX	\$0	11.59	31.19
DFA U.S. Small Cap Value II	Small Company	DFAVX	\$0	7.01	22.07
Warburg Pincus Adv Small Val	Small Company	n/a	\$0	8.52	57
Qualinvest Small Comps Val Y	Small Company	QSVYX	\$0	9.89	20.36
Prudential Small Companies Z	Small Company	PSCZX	\$0	9.09	n/a
Pacific Advisors Small Cap	Small Company	PASMX	\$0	10.89	43.7
Galaxy Small Cap Value Tr	Small Company	SMCEX	\$0	9.21	27.19
Arch Small Cap Equity Tr	Small Company	n/a	\$0	9.87	10.98
Arch Small Cap Equity Instl	Small Company	n/a	\$0	9.87	10.62
Rembrandt Small Cap Tr	Small Company	RSMCX	\$0	13.9	19.42
SEI Instl Inv Small Cap	Small Company	n/a	\$0	9.56	n/a
Kemper Small Cap Equity I	Small Company	n/a	\$0	10.41	14.54
Brown Capital Small Co Instl	Small Company	n/a	\$0	10.44	

Morning Star Report on DFA 9-10 Fund

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Exhibit CA-SM 3
Direct Testimony
Schedule 21
Page 1 of 3

DFA U.S. 9-10 Small Company
(Data as of 05-31-97)

Investment Objective	Rating	Assets		Yield (\$mil)	NAV
		Load			
Small Company	**	None	0.21%	1107.8	11.65

DFA U.S. 9-10 Small Company Portfolio seeks long-term capital appreciation.

The fund invests in a diverse group of small companies with readily marketable securities. These companies may be traded on the NYSE, the AMEX, or the over-the-counter market, but their market capitalizations must be comparable with those in the smallest quintile of the NYSE. The portfolio is rebalanced at least semiannually.

The fund is designed primarily for institutional investors. Prior to April 10, 1989, the fund was named DFA Investment Dimensions Small Company. Prior to 1983, the fund was named DFA Small Company.

Performance: Annual Return %

	YTD	1996	1995	1994	1993
DFA U.S. 9-10 Small Company	4.02	17.65	34.48	3.09	20.97
S&P 500 Index	15.43	22.95	37.53	1.32	10.06

These Figures Match
DFA's and Dr.
Andrews' Numbers in
his Schedule 6, page
1, Far-left Column.

Performance: Trailing Return %

	1 Mo	3 Mo	1 Yr	3 Yr Avg	5 Yr Avg
DFA U.S. 9-10 Small Company	10.22	1.92	-1.33	18.60	18.41
S&P 500 Index	6.08	7.80	29.40	25.92	18.36

Risk Measures

Morningstar Risk: Above Avg. Beta (3 Yr): 0.78

Morning Star Report on DFA 9-10 Fund

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Exhibit CA-SNB____
Direct Testimony____
Schedule 21____
Page 2 of 3____

Morningstar Return: Average Std. Deviation (3 Yr): 16.59
R-Squared: 32

Top Ten Portfolio Holdings (Data as of 02-28-97)

Ticker	Amount 000 Security	Value \$000	% Net Assets
KUH	186 Kuhlman	4380	0.38
GLE	117 Gleason	4187	0.36
INVX	179 Innovex	3844	0.33
FRC	157 First Republic Bancorp	3654	0.32
ROG	128 Rogers	3459	0.30
HEI	133 HEICO	3430	0.30
CULP	179 Culp	3214	0.28
CDSI	105 Computer Data Systems	3193	0.28
ELMG	142 Electromagnetic Sciences	3173	0.27
APR	160 American Precision Inds	3027	0.26

Portfolio Statistics

Price/Earnings Ratio: 21.64 Income Ratio %: 0.22
Price/Book Ratio: 2.80 Turnover Ratio %: 23.68
Return on Assets %: 8.75 Expense Ratio %: 0.61
Median Market Cap (\$mil) 123.29

This figure, 8.75%, is not provided in DFA's Annual Report. See Schedule 22, page 2.

These figures are the same as those reported in DFA's 1996 Annual Report

Expenses and Fees

Front-End Load: 0.00 12b-1 Fee: 0.00
Deferred Sales Charge: 0.00 Management Fee: 0.50
Redemption Fee: 0.00

Operations

Ticker Symbol: DFSCX

Morning Star Report on DFA 9-10 Fund

Docket No. 97-00982

Exhibit CA-SNB____

Direct Testimony____

Schedule 21____

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Fund Family: DFA Investment Dimensions Group
Address: 1299 Ocean Avenue 11th Floor
Santa Monica, CA 90401
Telephone: 310-395-8005

Fund Manager: Management Team
Manager Tenure: NA years
Min. Initial Purchase: \$2000000

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225 W. Wacker Dr. Chicago, IL 60606, 312-696-6000.
Although data are gathered from reliable sources,
completeness and accuracy cannot be guaranteed.

DFA Investment Dimensions Group Inc.
and
The DFA Investment Trust Company

ANNUAL REPORT

Year Ended November 30, 1996

DFA INVESTMENT DIMENSIONS GROUP INC.

FINANCIAL HIGHLIGHTS

for a share outstanding throughout each year

The U.S. 8-10 Small Company Portfolio												
	Year Ended Nov. 30, 1996	Year Ended Nov. 30, 1995	Year Ended Nov. 30, 1994	Year Ended Nov. 30, 1993	Year Ended Nov. 30, 1992	Year Ended Nov. 30, 1991	Year Ended Nov. 30, 1990	Year Ended Nov. 30, 1989	Year Ended Nov. 30, 1988	Year Ended Nov. 30, 1987	Year Ended Nov. 30, 1986	Year Ended Nov. 30, 1985
Net Asset Value, Beginning of Period	\$ 11.03	\$ 8.49	\$ 8.69	\$ 7.75	\$ 6.33	\$ 5.34	\$ 7.74	\$ 7.66	\$ 7.50	\$ 8.94		
Income From Investment Operations												
Net Investment Income	0.03	0.05	0.01	0.03	0.04	0.04	0.07	0.07	0.10	0.09		
Net Gain (Losses) on Securities (Realized and Unrealized)	1.85	2.61	0.40	1.67	1.53	1.64	(1.77)	0.98	1.48	(1.53)		
Total From Investment Operations	1.88	2.66	0.41	1.70	1.57	1.68	(1.70)	1.05	1.58	(1.44)		
Less Distributions												
Net Investment Income	(0.01)	(0.04)	(0.03)	(0.05)	(0.05)	(0.07)	(0.08)	(0.09)	(0.11)			
Net Realized Gains	(0.76)	(0.08)	(0.58)	(0.71)	(0.10)	(0.62)	(0.62)	(0.88)	(1.31)			
Total Distributions	(0.77)	(0.12)	(0.61)	(0.76)	(0.15)	(0.69)	(0.70)	(0.97)	(1.42)			
Net Asset Value, End of Period	\$ 12.14	\$ 11.03	\$ 8.49	\$ 8.69	\$ 7.75	\$ 6.33	\$ 5.34	\$ 7.74	\$ 7.66	\$ 7.50		
Total Return	18.05%	31.37%	5.06%	23.91%	25.24%	39.08%	(24.09)%	16.09%	24.36%	(16.04)%		
Net Assets, End of Period (thousands)	\$ 1,181,804	\$ 925,474	\$ 659,221	\$ 630,918	\$ 651,313	\$ 722,289	\$ 561,102	\$ 949,291	\$ 912,518	\$ 788,821		
Ratio of Expenses to Average Net Assets	0.61%	0.62%	0.65%	0.70%	0.68%	0.64%	0.62%	0.62%	0.62%	0.61%		
Ratio of Net Investment Income to Average Net Assets	0.22%	0.45%	0.16%	0.26%	0.53%	0.75%	0.99%	0.86%	1.19%	0.92%		
Portfolio Turnover Rate	23.68%	24.65%	16.56%	9.87%	9.72%	10.13%	3.79%	7.86%	25.98%	23.05%		
Average Commission Ratio (1)	\$ 0.0604	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

(1) Computed by dividing the total amount of brokerage commissions paid by the total shares of investment securities purchased and sold during the period for which commissions were charged, as required by the SEC for fiscal years beginning after September 1, 1995.

See accompanying Notes to Financial Statements

DFA INVESTMENT DIMENSIONS GROUP

1299 Ocean Avenue, 11th Floor, Santa Monica, California 90401
Telephone: (310) 395-8005

STATEMENT OF ADDITIONAL INFORMATION

March 28, 1997

DFA Investment Dimensions Group Inc. (the "Fund") offers thirty series of shares. This statement of additional information relates to twenty-four of those series (collectively, the "Portfolios"):

U.S. 9-10 Small Company Portfolio
U.S. 6-10 Small Company Portfolio
Enhanced U.S. Large Company Portfolio
U.S. Small Cap Value Portfolio
U.S. Large Cap Value Portfolio
DFA Real Estate Securities Portfolio
Japanese Small Company Portfolio
Pacific Rim Small Company Portfolio
United Kingdom Small Company Portfolio
Emerging Markets Portfolio
Emerging Markets Small Cap Portfolio
DFA Intermediate Government
Fixed Income Portfolio

Continental Small Company Portfolio
Large Cap International Portfolio
U.S. Large Company Portfolio
DFA International Small Cap Value Portfolio
International Small Company Portfolio
DFA One-Year Fixed Income Portfolio
DFA Two-Year Corporate Fixed Income Portfolio
DFA Two-Year Global Fixed Income Portfolio
DFA Two-Year Government Portfolio
DFA Five-Year Government Portfolio
DFA Global Fixed Income Portfolio
RWB/DFA International High Book
to Market Portfolio

This statement of additional information is not a prospectus but should be read in conjunction with the Portfolios' prospectus dated March 28, 1997, as amended from time to time, which can be obtained from the Fund by writing to the Fund at the above address or by calling the above telephone number.

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from the Series to satisfy the Portfolio's redemption request. Any such redemption the Portfolio would be in accordance with Rule 18f-1 under the Investment Company Act of 1940. Investors may incur brokerage charges and other transaction costs selling securities to the Portfolio. The International Equity, DFA Two-Year Global Fixed Income and DFA Global Fixed Income Portfolios reserve the right to redeem their shares in the currencies in which their investments (and, in respect of the Feeder Portfolios and International Small Company Portfolio, the currencies in which the corresponding Series' investments) are denominated. Investors may incur charges in converting such securities to dollars and the value of the securities may be affected by currency exchange fluctuations.

Shareholders may transfer shares of any Portfolio to another person by making a written request therefore to the Advisor who will transmit the request to the Fund's Transfer Agent. The request should clearly identify the account and number of shares to be transferred, and include the signature of all registered owners and all stock certificates, if any, which are subject to the transfer. The signature on the letter of request, the stock certificate or any stock power must be guaranteed in the same manner as described in the prospectus under "REDEMPTION OF SHARES." As with redemptions, the written request must be received in good order before any transfer can be made.

CALCULATION OF PERFORMANCE DATA

Following are quotations of the annualized percentage total returns for the one-, five-, and ten-year periods ended November 30, 1996 (as applicable) using the standardized method of calculation required by the SEC, which is net of the cost of any current reimbursement fees charged to investors and paid to the Portfolios. Also included is a quotation of the annualized percentage total return for the DFA Two-Year Global Fixed Income Portfolio (for the period from February 9, 1996, the date of commencement of operations), the Enhanced U.S. Large Company Portfolio (for the period from July 3, 1996, the date of commencement of operations) and the International Small Company Portfolio (for the period from October 1, 1996, the date of commencement of operations) to November 30, 1996 using the standardized method of calculation required by the SEC. Reimbursement fees of 1%, 1.5% and 1.5% were in effect from the inception of the Japanese, United Kingdom and Continental Small Company Portfolios, respectively, until June 30, 1995. A reimbursement fee of 1% was in effect from the inception of DFA International Small Cap Value Portfolio until June 30, 1995. Effective June 30, 1995, the amount of the reimbursement fee was reduced with respect to Continental Small Company, Pacific Rim Small Company, Japanese Small Company, Emerging Markets and DFA International Small Cap Value Portfolios, and eliminated with respect to the United Kingdom Small Company Portfolio. The current reimbursement fee for each Portfolio, expressed as a percentage of the net asset value of the shares of the Portfolios, is as follows: Continental Small Company, Pacific Rim Small Company and Emerging Markets Small Cap Portfolios - 1.00%; Japanese Small Company and Emerging Markets Portfolios - .50%; DFA International Small Cap Value Portfolio - .70%; and International Small Company Portfolio - .70%.

A reimbursement fee of 1% was charged to investors in The U.S. 9-10 Small Company Portfolio from December 9, 1986 through June 17, 1988. A reimbursement fee of 0.75% was charged to investors in The Large Cap International Portfolio from the date of its inception until March 5, 1992. In addition, for those Portfolios in effect for less than one, five, or ten years, the time periods during which the Portfolios have been active have been substituted for the periods stated (which in no case extends prior to the effective dates of the Portfolios' registration statements).

	<u>One Year</u>	<u>Five Years</u>	<u>Ten Years</u>
U.S. 9-10 Small Company Portfolio	18.03	20.38	12.35
U.S. 6-10 Small Company Portfolio	18.73	<u>57 Months</u> 13.42	n/a
U.S. Large Company Portfolio	27.48	17.88	<u>71 Months</u> 17.97

U.S. Small Cap Value Portfolio	21.77		
U.S. Large Cap Value Portfolio	22.26	<u>46 Months</u> 16.04	n/a
Enhanced U.S. Large Company Portfolio	<u>4 Months</u> 73.24	n/a	n/a
DFA Real Estate Securities Portfolio	28.24	<u>47 Months</u> 9.63	n/a
Japanese Small Company Portfolio	-6.74	-1.07	8.58
Pacific Rim Small Company Portfolio	17.87	<u>47 Months</u> 18.01	n/a
United Kingdom Small Company Portfolio	26.74	10.30	10.73
Emerging Markets Portfolio	12.61	<u>31 Months</u> 5.89	n/a
Continental Small Company Portfolio	12.83	5.39	<u>103.5 Months</u> 8.31
Large Cap International Portfolio	12.68	<u>64 Months</u> 8.27	n/a
RWB/DFA International High Book to Market Portfolio	14.60	<u>42 Months</u> 10.62	n/a
DFA One-Year Fixed Income Portfolio	5.91	5.28	6.70
DFA Five-Year Government Portfolio	7.54	6.25	<u>114 Months</u> 7.79
DFA Global Fixed Income Portfolio	11.13	8.40	<u>72 Months</u> 8.83
DFA Intermediate Government Fixed Income Portfolio	4.98	7.89	<u>73 Months</u> 9.37
DFA International Small Cap Value Portfolio	7.24	<u>23 Months</u> 2.08	n/a
DFA Two-Year Global Fixed Income Portfolio	<u>10 Months</u> 7.14	n/a	n/a
International Small Company Portfolio	<u>2 Months</u> -0.40	n/a	n/a

As the following formula indicates, the average annual total return is determined by finding the average annual compounded rates of return over the stated time period that would equate a hypothetical initial purchase order of \$1,000 to its redeemable value (including capital appreciation/depreciation and dividends and distributions paid and reinvested less any fees charged to a shareholder account) at the end

of the stated time period. The calculation assumes that all dividends and distributions are reinvested at the public offering price on the reinvestment dates during the period. The quotation assumes the account was completely redeemed at the end of each period and the deduction of all applicable charges and fees. According to the SEC formula:

$$P(1 + T)^n = ERV$$

where:

P = a hypothetical initial payment of \$1,000

T = average annual total return

n = number of years

ERV = ending redeemable value of a hypothetical \$1,000 payment made at the beginning of the one-, five-, and ten-year periods at the end of the one-, five-, and ten-year periods (or fractional portion thereof).

Following are quotations of the annualized total returns for the one-, five-, and ten-year periods ended November 30, 1996 (as applicable) using a non-standardized method of calculation which is used in communicating performance data in addition to the standardized method required by the SEC. Also included is a quotation of the annualized percentage total return for the DFA Two-Year Global Fixed Income Portfolio (for the period from February 9, 1996, the date of commencement of operations), the Enhanced U.S. Large Company Portfolio (for the period from July 3, 1996, the date of commencement of operations) and the International Small Company Portfolio (for the period from October 1, 1996, the date of commencement of operations) to November 30, 1996 using a non-standardized method of calculation. The non-standardized quotations differ from the standardized in that they are calculated without deduction of any reimbursement fees charged to investors and paid to the Portfolios which would otherwise reduce return quotations for the Portfolios with such fees. Additionally, the non-standardized quotations are presented over time periods which extend prior to the initial investment in the Portfolios (except for The Continental Small Company (and Large Cap International) Portfolios) by using simulated data for the investment strategies of the Portfolios for that portion of the period prior to the initial investment dates. The simulated data excludes the deduction of Portfolio expenses which would otherwise reduce the returns quotations. Non-standardized quotations are also presented for the United Kingdom and Japanese Small Company Portfolios calculated assuming the local currencies of the corresponding Series are invested and redeemed at the beginning and ending dates of the period. The local currency calculations ignore the effect of foreign exchange rates on the investment and only express the returns of the underlying securities of the Series.

	<u>Effective Date/ Initial Investment</u>	<u>One Year</u>	<u>Five Years</u>	<u>Ten Years</u>
U.S. 9-10 Small Company Portfolio	12/22/81 12/22/81	18.03	20.38	12.46
U.S. 6-10 Small Company Portfolio	03/06/92 03/20/92	18.73	17.00	11.57
U.S. Large Company Portfolio	02/26/90 12/31/90	27.48	17.88	15.02
U.S. Small Cap Value Portfolio	09/18/92 03/01/93	21.77	22.14	14.88
U.S. Large Cap Value Portfolio	09/18/92 02/18/93	22.26	20.47	15.32

Options and forward contracts is generally governed by Section 1256 of the Code. Positions generally include listed options on debt securities, options on broad-based on futures contracts, regulated futures contracts and certain foreign currency contracts and options thereon.

Absent a tax election to the contrary, each such Section 1256 position held by a Portfolio or Series will be marked-to-market (i.e., treated as if it were sold for fair market value) on the last business day of a Portfolio's or Series' fiscal year, and all gain or loss associated with fiscal year transactions and marked-to-market positions at fiscal year end (except certain currency gain or loss covered by Section 988 of the Code) will generally be treated as 60% long-term capital gain or loss and 40% short-term capital gain or loss. The effect of Section 1256 marked-to-market rules may be to accelerate income or to convert what otherwise would have been long-term capital gains into short-term capital gains or short-term capital losses into long-term capital losses within a Portfolio or Series. The acceleration of income on Section 1256 positions may require a Portfolio or Series to accrue taxable income without the corresponding receipt of cash. In order to generate cash to satisfy the distribution requirements of the Code, a Portfolio or Series may be required to dispose of portfolio securities that it otherwise would have continued to hold or to use cash flows from other sources such as the sale of a Portfolio's or Series' shares. In these ways, any or all of these rules may affect both the amount, character and timing of income distributed to shareholders by a Portfolio.

When a Portfolio (or in the case of a Feeder Portfolio, the corresponding Series) holds an option or contract which substantially diminishes a Portfolio's or Series' risk of loss with respect to another position of a Portfolio or Series (as might occur in some hedging transactions), this combination of positions could be treated as a "straddle" for tax purposes, resulting in possible deferral of losses, adjustments in the holding periods of a Portfolio's or Series' securities and conversion of short-term capital losses into long-term capital losses. Certain tax elections exist for mixed straddles (i.e., straddles comprised of at least one Section 1256 position and at least one non-Section 1256 position) which may reduce or eliminate the operation of these straddle rules.

The Portfolios and those Series taxable as regulated investment companies are also subject to the requirement that less than 30% of their annual gross income be derived from the sale or other disposition of securities and certain other investments held for less than three months ("short-short income"). This requirement may limit a Portfolio's (or in the case of a Feeder Portfolio, the corresponding Series') ability to engage in options, straddles, hedging transactions and forward or futures contracts because these transactions are often consummated in less than three months, may require the sale of portfolio securities held less than three months and may, as in the case of short sales of portfolio securities, reduce the holding periods of certain securities within a Portfolio or Series, resulting in additional short-short income for a Portfolio or Series.

A Portfolio (or in the case of a Feeder Portfolio, the corresponding Series) will monitor its transactions in such options and contracts and may make certain other tax elections in order to mitigate the effect of the above rules and to prevent disqualification of a Portfolio or Series as a regulated investment company under Subchapter M of the Code.

DIRECTORS AND OFFICERS

The names and addresses of the directors and officers of the Fund and a brief statement of their present positions and principal occupations during the past five years is set forth below.

Directors

David G. Booth*, 50, Director, President and Chairman-Chief Executive Officer, Santa Monica, CA. President, Chairman-Chief Executive Officer and Director, Dimensional Fund Advisors Inc., DFA Securities Inc., DFA Australia Ltd., Dimensional Investment Group Inc. (registered investment company) and Dimensional Emerging Markets Fund Inc. (registered investment company). Trustee, President and Chairman-Chief Executive Officer of The DFA Investment Trust Company. Chairman and Director, Dimensional Fund Advisors Ltd.

George M. Constantinides, 49, Director, Chicago, IL. L
Graduate School of Business, University of Chicago. Trustee, Th
Director, Dimensional Investment Group Inc. and Dimensional Emc _ _

John P. Gould, 58, Director, Chicago, IL. Steven G. Rothmeier Distinguished Service Professor of Economics, Graduate School of Business, University of Chicago. Trustee, The DFA Investment Trust Company and First Prairie Funds (registered investment companies). Director, Dimensional Investment Group Inc., Dimensional Emerging Markets Fund Inc. and Harbor Investment Advisors. Executive Vice President, Lexecon Inc. (economics, law, strategy and finance consulting).

Roger E. Ibbotson, 53, Director, New Haven, CT. Professor in Practice of Finance, Yale School of Management. Trustee, The DFA Investment Trust Company. Director, Dimensional Investment Group Inc., Dimensional Emerging Markets Fund Inc., Hospital Fund, Inc. (investment management services) and BIRR Portfolio Analysis, Inc. (software products). Chairman and President, Ibbotson Associates, Inc., Chicago, IL (software, data, publishing and consulting).

Merton H. Miller, 73, Director, Chicago, IL. Robert R. McCormick Distinguished Service Professor Emeritus, Graduate School of Business, University of Chicago. Trustee, The DFA Investment Trust Company. Director, Dimensional Investment Group Inc. and Dimensional Emerging Markets Fund Inc. Public Director, Chicago Mercantile Exchange.

Myron S. Scholes, 55, Director, Greenwich, CT. Limited Partner, Long-Term Capital Management L.P. (money manager). Frank E. Buck Professor of Finance, Graduate School of Business and Professor of Law, Law School, Senior Research Fellow, Hoover Institution, (all) Stanford University (on leave). Trustee, The DFA Investment Trust Company. Director, Dimensional Investment Group Inc., Dimensional Emerging Markets Fund Inc., Benham Capital Management Group of Investment Companies and Smith Breedon Group of Investment Companies.

Rex A. Siquefield*, 52, Director, Chairman and Chief Investment Officer, Santa Monica, CA. Chairman-Chief Investment Officer and Director, Dimensional Fund Advisors Inc., DFA Securities Inc., DFA Australia Ltd., Dimensional Investment Group Inc. and Dimensional Emerging Markets Fund Inc. Trustee, Chairman-Chief Investment Officer of The DFA Investment Trust Company. Chairman, Chief Executive Officer and Director, Dimensional Fund Advisors Ltd.

* Interested Director of the Fund.

Officers

Each of the officers listed below hold the same office in the following entities: Dimensional Fund Advisors Inc., DFA Securities Inc., DFA Australia Ltd., Dimensional Investment Group Inc., The DFA Investment Trust Company, Dimensional Fund Advisors Ltd., and Dimensional Emerging Markets Fund Inc.

Arthur Barlow, 41, Vice President, Santa Monica, CA.

Maureen Connors, 60, Vice President, Santa Monica, CA.

Truman Clark, 55, Vice President, Santa Monica, CA. Consultant until October 1995 and Principal and Manager of Product Development, Wells Fargo Nikko Investment Advisors, San Francisco, CA from 1990-1994.

Robert Deere, 39, Vice President, Santa Monica, CA.

Irene R. Diamant, 46, Vice President and Secretary (for all entities other than Dimensional Fund Advisors Ltd.), Santa Monica, CA.

Margaret East, 56, Secretary, Dimensional Fund Advisors Ltd.

The Fund commenced offering shares of Emerging Mark International Small Cap Value Portfolio in December, 1994; DFA Two- in February, 1996; Enhanced U.S. Large Company Portfolio in July, 1996, and International Small Company Portfolio in October, 1996. The DFA Two-Year Corporate Fixed Income, DFA Two-Year Government and Emerging Markets Small Cap Portfolios had not commenced operations as of November 30, 1996.

Until September, 1995, The DFA Intermediate Government Fixed Income Portfolio was named The DFA Intermediate Government Bond Portfolio, The DFA Global Fixed Income Portfolio was named The DFA Global Bond Portfolio, The Pacific Rim Small Company Portfolio was named The Asia-Australia Small Company Portfolio, The U.S. Large Cap Value Portfolio was named The U.S. Large Cap High Book to Market Portfolio, The U.S. Small Cap Value Portfolio was named The U.S. Small Cap High Book to Market Portfolio, The U.S. 9-10 Small Company Portfolio was named the Small Company Shares, The DFA One-Year Fixed Income Portfolio was named The DFA Fixed Income Shares, and The Continental Small Company Portfolio was named the Continental European Portfolio. Until February, 1996, RWB/DFA International High Book to Market Portfolio was named DFA International High Book to Market Portfolio. From September, 1995 until December, 1996, The DFA Real Estate Securities Portfolio was named DFA/AEW Real Estate Securities Portfolio.

Coopers and Lybrand L.L.P., the Fund's independent accountants, audits the Fund's financial statements.

PRINCIPAL HOLDERS OF SECURITIES

As of February 28, 1997, the following stockholders owned beneficially at least 5% of the outstanding stock of the Portfolios, as set forth below.

THE U.S. 9-10 SMALL COMPANY PORTFOLIO

Charles Schwab & Company, Inc. - REIN*	25.44%
101 Montgomery Street	
San Francisco, CA 94104	

State Farm Insurance Companies	10.76%
One State Farm Plaza	
Bloomington, IL 61710	

Pepsico Inc. Master Trust	8.87%
The Northern Trust Company Trustee	
P.O. Box 92956	
801 South Canal	
Chicago, IL 60675	

Charles Schwab & Company, Inc. - REIN*	(see address above)	5.97%
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Owens-Illinois	5.48%
Master Retirement Trust	
34 Exchange Place	
Jersey City, NJ 07302	

National Electrical Benefit Fund	5.26%
1125 15th Street NW	
Washington, DC 20005	

THE U.S. 6-10 SMALL COMPANY PORTFOLIO

McKinsey & Company Master Retirement Trust	26.43%
55 E. 52nd Street	
New York, NY 10055	

Data on Dr. Andrews' Companies

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Exhibit CA-SNB
Direct Testimony
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COMPANY NAME *	PRICE AS OF 4/30/97	STOCK OUTSTANDING (000)	NUM OF SHARE HOLDERS	SHARES PER STOCKHOLDER	VALUE OF HOLDINGS PER SHAREHOLDER 4/30/97	MARKET VALUE 4/30/97 \$(Millions)
(1)	(2)	(3)	(4)	(5) [col (3) / col (4)]	(6) [col (2) X col (5)]	(7) [col (2) X col (3)]
Atmos Energy Corporation	\$22.63	16135	28,624	564	\$12,753	365
Berkshire Gas Company	\$15.13	2177	1,881	1157	\$17,505	33
Bay State Gas Company	\$25.50	13439	10,820	1242	\$31,671	343
Cascade Natural Gas Corporation	\$16.38	10824	10840	999	\$16,351	177
Colonial Gas Company	\$20.00	8518	5931	1436	\$28,724	170
Chesapeake Utilities Corporation	\$16.75	4453	2213	2012	\$33,704	75
Delta Natural Gas Company, Inc.	\$16.63	2325	2,382	976	\$16,227	39
Essex County Gas Company	\$24.25	1667	1,336	1248	\$30,258	40
Energen Corporation	\$30.50	13027	7,700	1692	\$51,600	397
Energy North Inc	\$21.75	3244	2,300	1410	\$30,677	71
Energy West Incorporated	\$8.50	2357	1,600	1473	\$12,522	20
Mobile Gas Service Corporation	\$26.75	3228	1,624	1988	\$63,171	86
North Carolina Natural Gas Corporation	\$29.63	6613	5,094	1298	\$38,459	196
Northwest Natural Gas Company	\$24.25	22566	10,859	2078	\$50,394	547
Public Service Company of North Carolina, Incorporated	\$17.25	19296	11,500	1678	\$28,945	333
Pennsylvania Enterprises, Inc.	\$22.13	9608	6,627	1450	\$32,077	213
Providence Energy Corporation	\$17.75	5767	6,052	953	\$16,914	102
Southeastern Michigan Gas Enterprises, Inc.	\$17.58	13020	8,509	1530	\$26,892	229
United Cities Gas Company	\$21.50	13221	7681	1721	\$37,007	284
Valley Resources, Inc.	\$12.25	4266	2824	1511	\$18,505	52
Yankee Energy System, Inc.	\$21.13	10450	28,499	367	\$7,746	221
Average	\$20.39	8867	7,852	1371	\$28,195	190

* Excludes Washington Gas Company
It Merged With an Electric Power Company

Gas Company Stocks Owned by the DFA 9-10 Fund

Did the U.S. 9-10 Small Company Mutual Fund
Own Stock in Dr. Andrews' Comparable Companies?

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Direct Testimony
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COMPANY	94	95	96
Almos Energy Corporation	NO	NO	NO
Berkshire Gas Company	YES	YES	YES
Bay State Gas Company	NO	NO	NO
Cascade Natural Gas Corporation	YES	YES	YES
Chesapeake Utilities Corporation	YES	YES	YES
Colonial Gas Company	YES	YES	YES
Delta Natural Gas Company, Inc.	YES	YES	YES
Energen Corporation	NO	NO	NO
Energy North Inc	YES	NO	NO
Energy West Incorporated	NO	NO	YES
Essex County Gas Company	NO	NO	NO
Mobile Gas Service Corporation	YES	YES	YES
North Carolina Natural Gas Corporation	NO	NO	YES
Northwest Natural Gas Company	NO	NO	YES
Pennsylvania Enterprises, Inc.	NO	NO	NO
Providence Energy Corporation	YES	YES	YES
Public Service Company of North Carolina, Incorporated	NO	NO	NO
Southeastern Michigan Gas Enterprises, Inc.	NO	NO	NO
United Cities Gas Company	NO	NO	NO
Washington Energy	NO	NO	NO
Valley Resources, Inc.	YES	YES	YES
Yankee Energy System, Inc.	NO	NO	NO
TOTAL NOT INCLUDED IN PORTFOLIO	13	13	11
TOTAL INCLUDED IN PORTFOLIO	9	9	11

SOURCE: 1994 & 1996 - DFA ANNUAL REPORT
SOURCE: 1995 10K REPORT

Table A-1

**Large Company Stocks:
Total Returns**
(continued)

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Exhibit CA-SNB____
Direct Testimony____
Schedule 27____
Page 1 of 1____

From January 1971 to December 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	JAN-DEC*
1971	0.0419	0.0141	0.0382	0.0377	-0.0367	0.0021	-0.0399	0.0412	-0.0056	-0.0404	0.0027	0.0877	1971	0.1431
1972	0.0194	0.0299	0.0072	0.0057	0.0219	-0.0205	0.0036	0.0391	-0.0036	0.0107	0.0505	0.0131	1972	0.1898
1973	-0.0159	-0.0333	-0.0002	-0.0395	-0.0139	-0.0051	0.0394	-0.0318	0.0415	0.0003	-0.1082	0.0183	1973	-0.1466
1974	-0.0085	0.0019	-0.0217	-0.0373	-0.0272	-0.0128	-0.0759	-0.0828	-0.1170	0.1657	-0.0448	-0.0177	1974	-0.2647
1975	0.1251	0.0674	0.0237	0.0493	0.0509	0.0462	-0.0659	-0.0144	-0.0328	0.0637	0.0313	-0.0096	1975	0.3720
1976	0.1199	-0.0058	0.0326	-0.0099	-0.0073	0.0427	-0.0068	0.0014	0.0247	-0.0206	-0.0009	0.0540	1976	0.2384
1977	-0.0489	-0.0151	-0.0119	0.0014	-0.0150	0.0475	-0.0151	-0.0133	0.0000	-0.0415	0.0370	0.0048	1977	-0.0718
1978	-0.0596	-0.0161	0.0276	0.0870	0.0136	-0.0152	0.0560	0.0340	-0.0048	-0.0891	0.0260	0.0172	1978	0.0656
1979	0.0421	-0.0284	0.0575	0.0036	-0.0168	0.0410	0.0110	0.0611	0.0025	-0.0656	0.0514	0.0192	1979	0.1844
1980	0.0610	0.0031	-0.0987	0.0429	0.0562	0.0296	0.0676	0.0131	0.0281	0.0187	0.1095	-0.0315	1980	0.3242
1981	-0.0438	0.0208	0.0380	-0.0213	0.0062	-0.0080	0.0007	-0.0554	-0.0502	0.0528	0.0441	-0.0265	1981	-0.0491
1982	-0.0163	-0.0512	-0.0060	0.0414	-0.0288	-0.0174	-0.0215	0.1267	0.0110	0.1126	0.0438	0.0173	1982	0.2141
1983	0.0348	0.0260	0.0365	0.0758	-0.0052	0.0382	-0.0313	0.0170	0.0136	-0.0134	0.0233	-0.0061	1983	0.2251
1984	-0.0065	-0.0328	0.0171	0.0069	-0.0534	0.0221	-0.0143	0.1125	0.0002	0.0026	-0.0101	0.0253	1984	0.0627
1985	0.0768	0.0137	0.0018	-0.0032	0.0615	0.0159	-0.0026	-0.0061	-0.0321	0.0447	0.0716	0.0467	1985	0.3216
1986	0.0044	0.0761	0.0554	-0.0124	0.0549	0.0166	-0.0569	0.0748	-0.0822	0.0556	0.0256	-0.0264	1986	0.1847
1987	0.1343	0.0413	0.0272	-0.0088	0.0103	0.0499	0.0498	0.0385	-0.0220	-0.2152	-0.0819	0.0738	1987	0.0523
1988	0.0427	0.0470	-0.0302	0.0108	0.0078	0.0464	-0.0040	-0.0331	0.0424	0.0273	-0.0142	0.0181	1988	0.1681
1989	0.0723	-0.0249	0.0236	0.0516	0.0402	-0.0054	0.0898	0.0193	-0.0039	-0.0233	0.0208	0.0236	1989	0.3149
1990	-0.0671	0.0129	0.0263	-0.0247	0.0975	-0.0070	-0.0032	-0.0903	-0.0492	-0.0037	0.0644	0.0274	1990	-0.0317
1991	0.0442	0.0716	0.0238	0.0028	0.0428	-0.0457	0.0468	0.0235	-0.0164	0.0134	-0.0404	0.1143	1991	0.3055
1992	-0.0186	0.0128	-0.0196	0.0291	0.0054	-0.0145	0.0403	-0.0202	0.0115	0.0036	0.0337	0.0131	1992	0.0767
1993	0.0073	0.0135	0.0215	-0.0245	0.0270	0.0033	-0.0047	0.0381	-0.0074	0.0203	-0.0094	0.0123	1993	0.0999
1994	0.0335	-0.0270	-0.0435	0.0130	0.0163	-0.0247	0.0331	0.0407	-0.0241	0.0229	-0.0367	0.0146	1994	0.0131
1995	0.0260	0.0388	0.0296	0.0291	0.0395	0.0235	0.0333	0.0027	0.0419	-0.0035	0.0440	0.0185	1995	0.3743

* Compound annual return

Office of the Consumer Advocate Interrogatory/Data Request-7/8/97

- Q.47. Regarding the results of Dr. Andrew's regression analysis shown in Schedule 9, produce the T-statistic for each company's alpha and the T-statistic for each company's beta.
- A.47. The results of regressions performed on the data for each company listed in Schedule 9 are employed only in summary, aggregated form as average alphas and betas. The average alpha and average beta are analogous to the alpha and beta of a portfolio of common stocks, in this case a "portfolio" of 22 small gas LDC's. Tests of significance, such as T-statistics, from the regressions related to individual stocks intrinsically cannot be summed or averaged across the composite (or portfolio). Accordingly, they were not found in company with the individual regressions and, hence, cannot be supplied as requested.



Signature

Victor L. Andrews, President, Andrews Financial Associates, Inc.

APPENDIX A

IBBOTSON YEARBOOK'S HYPOTHETICAL DISTRIBUTION OF RETURNS

The derivation of Schedule 12 and Charts two and three is based on the same probability principles used in the example shown in SBBI-97 at pages 154-155. Those pages are attached to and are part of this appendix as Attachments 1 and 2. The hypothetical distribution in the example assumes:

10% is the size of the loss

30% is the size of the gain

50% is the probability of a loss

50% is the probability of a gain.

Starting with an investment of \$1, after 1 year there are two possible values, the investment will be worth either \$1.3 or 90 cents. After two years there are 4 possibilities, one at \$1.69, two outcomes at \$1.17 and one at \$.81. This shows that the number of possibilities double each year. The example is well-grounded in mathematics and is a simple illustration of a mathematical formula that is over 500 years old. If \$1.3 is treated as X and \$.9 is treated as Y, the first year after the investment the possible outcomes are:

$$(X + Y)^1 = 1(\$1.3) + 1(\$0.9)$$

In the second year after the investment the possible outcomes are:

$$(X + Y)^2 = 1(X^2) + 2(XY) + 1(Y^2)$$

$$(\$1.3 + \$.9)^2 = \underline{1}(\$1.69) + \underline{2}(\$1.17) + \underline{1}(\$.81)$$

The underlined values -- 1 and 1 in the first year and 1, 2 ,1 in the second year -- match the total number of possibilities - 2 in the first year and 4 in the second, and the values in the parentheses -- \$1.3 and \$.9 in the first year and \$1.69 , \$1.17, \$.81 in the second -- represent the values of the possibilities. There are two important aspects of the example especially in the second year: the geometric mean is the middle value, \$1.17, which has a corresponding annual return of 8.2%, is the most likely outcome - 2 chances out of four. Three out of the four chances, 75% of the possibilities, are at or below the middle value. The odds are only 25% that the investment will reach the average of \$1.21, which has a corresponding return of 10%.

The heart of the example can be restated.

This information about a distribution:

10% is the size of the loss

30% is the size of the gain

50% is the probability of a loss

50% is the probability of a gain.

Leads to these facts about the distribution:

an 8.2% return is the distribution's middle

a 10% return is the distribution's average

And

the number of possibilities doubles as the years increase: in the first year there are 2

possibilities, 4 in the second, 8 in the third and so forth.

By the time 71 years elapse from 1925 to 1996 the equation above changes to:

$$(X + Y)^{71}$$

Although this term is huge it can be calculated easily with computers, giving the total number of possibilities and the possibilities for each outcome. Attachments 3 and 4 show the possibilities each year, the symmetrical pattern each year and the distribution in percentage terms. The patterns do not depend on the values of X and Y. No matter what values X and Y are, the pattern of possibilities is the same. This is why Chart 3 in my direct testimony is also symmetrical.

ACTUAL DISTRIBUTION OF LARGE COMPANY RETURNS: 1925-1996

Ibbotson's data on large companies covers 71 years. It shows a return of 10.7% as being in the middle of the distribution and an average of return of 12.7%. This is different than the example in the sense that the order of the information is reversed from the example.

The information about the actual distribution:

a 10.7% return is the distribution's middle

a 12.7% return is the distribution's average

50% is the probability of a loss

50% is the probability of a gain.

Leads to these questions about the actual distribution:

What percentage is the size of the loss?

What percentage is the size of the gain?

I calculated the size of the loss to be 8.3% and the size of the gain to be 33.6%. These are the first and last values in column (3) of Schedule 12. I then applied these two figures to the formula

$$(X + Y)^{71}$$

This gives the total number of possible returns, the value of each return, and the probability of each return in 1996 - given a \$1 investment in 1925. This is the data shown in Schedule 12.

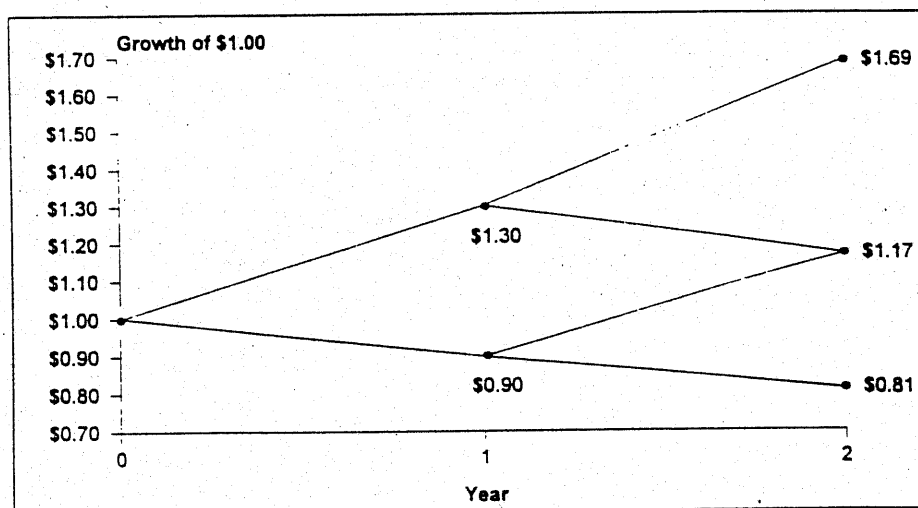
The Schedule indicates that the average return, 12.7%, has a less than 20% chance of being achieved in 1996. If the odds were looked at in 1927, the second year after the investment, the chance of achieving the average return would be no more than 25%. The point here is that as time progresses, the average return has a little less of a chance of being achieved. Its odds shrink from no more than 25% in the second year to less than 20% in the 71st year. This is not much of a change, but it highlights why the average return is not considered a useful measure by the sources I quoted. The average return is not the midpoint of the distribution, and the average return gets further and further away from the midpoint as time progresses.

where the cost of capital is the sum of its parts. Therefore, the CAPM expected equity risk premium must be derived by arithmetic, *not geometric*, subtraction.

Arithmetic Versus Geometric Means

The expected equity risk premium should always be calculated using the arithmetic mean. The arithmetic mean is the rate of return which, when compounded over multiple periods, gives the mean of the probability distribution of ending wealth values. (A simple example given below shows that this is true.) This makes the arithmetic mean return appropriate for computing the cost of capital. The discount rate that equates expected (mean) future values with the present value of an investment is that investment's cost of capital. The logic of using the discount rate as the cost of capital is reinforced by noting that investors will discount their expected (mean) ending wealth values from an investment back to the present using the arithmetic mean, for the reason given above. They will, therefore, require such an expected (mean) return prospectively (that is, in the present looking toward the future) to commit their capital to the investment.

For example, assume a stock has an expected return of +10 percent in each year and a standard deviation of 20 percent. Assume further that only two outcomes are possible each year— +30 percent and -10 percent (that is, the mean plus or minus one standard deviation), and that these outcomes are equally likely. (The arithmetic mean of these returns is 10 percent, and the geometric mean is 8.2 percent.) Then the growth of wealth over a two-year period occurs as shown below:



Appendix A of _____
 Direct Testimony
 Docket No. 97-00982
 Exhibit CA-SNB _____
 Attachment 2

Note that the median (middle outcome) and mode (most common outcome) are given by the geometric mean, 8.2 percent, which compounds up to 17 percent over a 2-year period (hence a terminal wealth of \$1.17). However, the *expected value*, or probability-weighted average of all possible outcomes, is equal to:

	(.25	x	1.69)	=	0.4225
+	(.50	x	1.17)	=	0.5850
+	(.25	x	0.81)	=	0.2025
TOTAL					1.2100

Now, the rate that must be compounded up to achieve a terminal wealth of \$1.21 after 2 years is 10 percent; that is, the expected value of the terminal wealth is given by compounding up the *arithmetic*, not the geometric mean. Since the arithmetic mean equates the expected future value with the present value, it is the discount rate.

Stated another way, the arithmetic mean is correct because an investment with uncertain returns will have a higher expected ending wealth value than an investment that earns, with certainty, its compound or geometric rate of return every year. In the above example, compounding at the rate of 8.2 percent for two years yields a terminal wealth of \$1.17, based on \$1.00 invested. But holding the uncertain investment, with a possibility of high returns (two +30 percent years in a row) as well as low returns (two -10 percent years in a row), yields a higher expected terminal wealth, \$1.21. In other words, more money is gained by higher-than-expected returns than is lost by lower-than-expected returns. Therefore, in the investment markets, where returns are described by a probability distribution, the arithmetic mean is the measure that accounts for uncertainty, and is the appropriate one for estimating discount rates and the cost of capital.

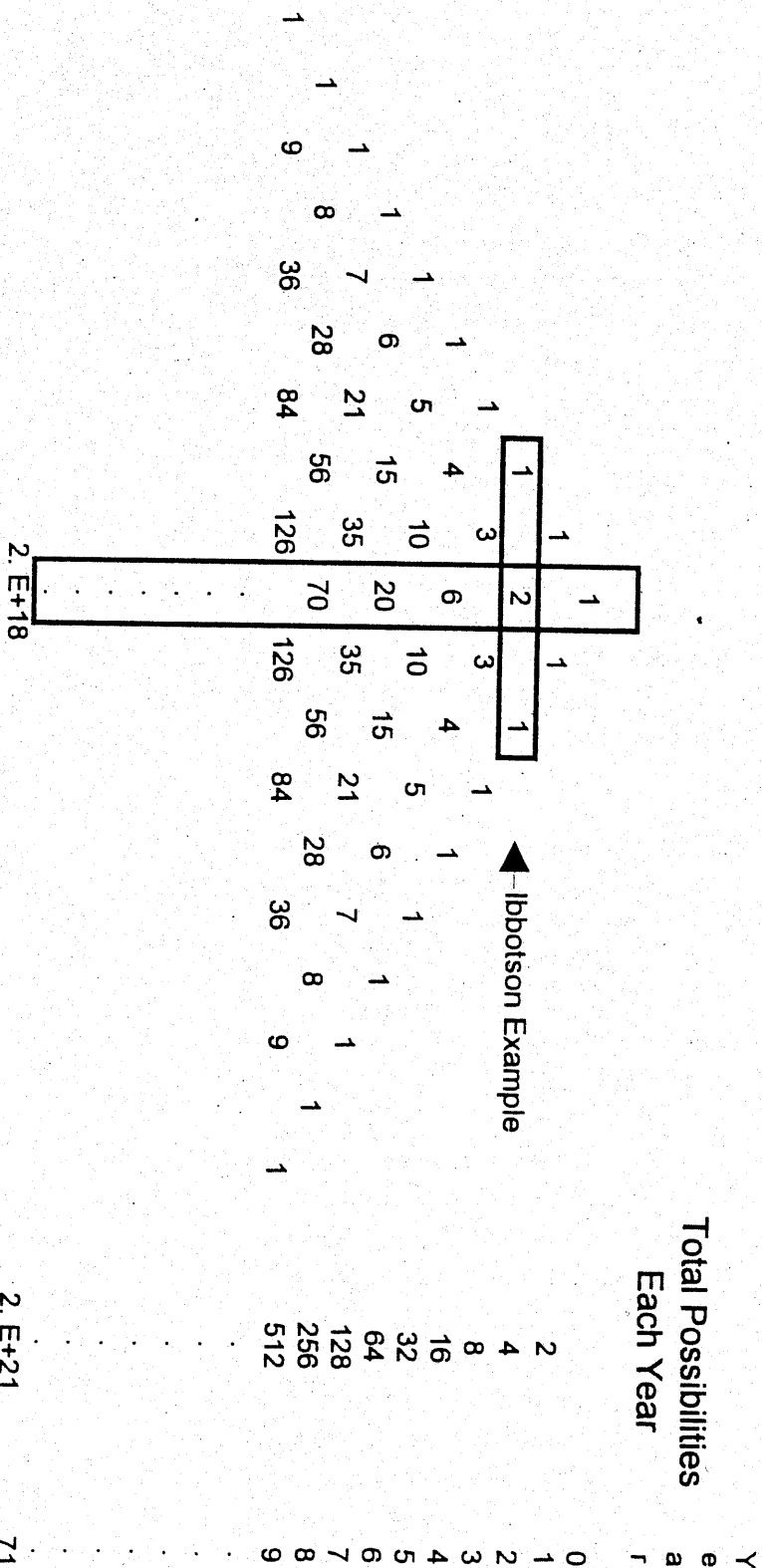
Arbitrage Pricing Theory

APT is a model of the expected return on a security. It was originated by Stephen A. Ross, and elaborated by Richard Roll. APT treats the expected return on a security (*i.e.*, its cost of capital) as the sum of the payoffs for an indeterminate number of risk factors, where the amount of each risk factor inherent in a given security is estimated. Like the CAPM, APT is a model that is consistent with equilibrium and does not attempt to outguess the market. APT

Distribution of Possibilities for (X + Y)

Center of the Distribution

Appendix A of _____
 Direct Testimony
 Docket No. 97-00982
 Exhibit CA-SNB _____
 Attachment 3



Total Possibilities Each Year		100%		50%		50%		25%		13%		6%		3%		2%		1%		0%	
Y	1	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
a	1	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
r	2	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	3	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	4	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	5	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	6	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	7	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	8	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	9	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	10	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	11	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	12	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	13	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	14	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	15	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	16	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	17	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	18	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	19	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	20	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	21	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%
	22	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%	100%	50%	50%	25%	13%	6%	3%	2%	1%	0%

Response to Request 19 of 39

19. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 27, lines 21 and 22, please explain, in detail, every reason or fact supporting Mr. Brown's assertion that the results of Dr. Murry's capital structure analysis and Mr. Brown's capital structure analysis are not different because of differences in the dates between values reported in Value Line and by the SEC and provide a copy of each and every document, treatise or financial accounting principle upon which Mr. Brown relied in reaching such conclusion.

Answer:

Refer to Dr. Brown's testimony, answers 38 and 39, which explain and prove that Value Line's equity ratio of 56.1 percent for Piedmont as of October 31, 2002, is identical to Piedmont's stated equity ratio of 56 percent as of October 31, 2002, which appears at page 14 of Piedmont's 10-K filed with the SEC.

Since Value Line's equity ratio and Piedmont's equity ratio are both dated October 31, 2002, and because Piedmont's U-1/A filing shows a 51.5 percent equity ratio dated October 31, 2002, the difference between Dr. Murry's and Dr. Brown's analysis stems from their different handling of short-term debt, rather than when the information is dated.

Response to Request 20 of 39

20. In reference to the prefiled testimony of Consumer Advocate witness Brown set forth at page 33, lines 22-30, please identify and produce each and every document or other evidence supporting Mr. Brown's assertion that Piedmont intentionally filed its rate case petition in April 2003 for the purpose of avoiding the inclusion of a large amount of short-term debt in its capital structure.

Answer:

Piedmont is on record as preferring to finance its construction and operating expenses with short term debt when "short term bank loans [are] more favorable than prevailing long-term debt." This is a direct quote from Piedmont's response in TRA Docket 99-00994, CAPD's DATA REQUEST #1" item 122. That data request and the company's answer are attached.

The discovery request, item 122 is as follows:

"122.

Prevailing interest rates for "A" rated debt from Nov. 1997 through in Jan. 1999, according to the Federal Reserve and other sources, ranged from a low of 6.91% to 7.26%. Explain why the company issued its new debt in Sept. 1999 instead of the time period of Nov. 1997 through Apr. 1999.

Response:

The Company forecasts construction and operating expenditures for the purpose of anticipating both short term and long term capital requirements. During the time period November 1997 through April 1999, capital requirements were met by internally generated funds and short term bank loans with rates more favorable than

Continued - Response to Request 20 of 39

prevailing long term debt rates."

Also, in Docket 99-00994 Piedmont filed a capital structure as of August 31, 1999, even though the company filed its case on December 30, 1999. In the discovery process CAPD discovered that Piedmont's capital structure included two high-cost notes which the company retired and replaced with lower cost notes in late September 1999. But those lower cost notes were not in the company's capital structure.

Consequently, in TRA Docket 99-00994, CAPD's DATA REQUEST #1" item 86, CAPD asked the company for "any written material indicating when the company informed the Tennessee Regulatory Authority of the company's intent to retire the notes, or the company's actual retirement of the notes."

The company responded: "The Company is unaware of any requirement to inform the Tennessee Regulatory Authority of its intent to retire or the actual retirement of debt securities."

That data request and the company's answer are attached.

The discovery request, item 86 is as follows:

"86.

Regarding the notes in accounts 22412, 22413 and 22414, provide copies of any written material indicating when the company informed the Tennessee Regulatory Authority of the company's intent to retire the notes, or the company's actual retirement of the notes.

Continued - Response to Request 20 of 39

Response:

The Company is unaware of any requirement to inform the Tennessee Regulatory Authority of its intent to retire or the actual retirement of debt securities. As provided in response to Item 87, the TRA approved the Company's request to issue \$150 million in debt securities in Docket No. 97-01047. The instruments under which the debt was issued were approved by the TRA (or its predecessor). These instruments authorize and/or require Piedmont to call or retire debt."

Piedmont's responses to item 122 of CAPD Discovery Request #1 in Docket 99-0994 clearly demonstrate the Company's preference for short-term debt over long term debt when "short term bank loans [are] more favorable than prevailing long-term debt."

The company's response to item 86 shows that the Company's position is that it has no obligation to inform the TRA of actual or intended changes in the company's capital structure which the company files in a rate case and which the company represents as a basis for setting prices for natural gas service. Nothing the company has filed in the current docket, 03-00313, indicates the company has changed its position.

This information, in addition to Dr. Brown's direct testimony page 29 lines 17-23, page 31 lines 1-8, page 35 lines 12-24, page 36 lines 27-30, page 35, line 31 to page 36 line 13, and page 37, lines 1-23, supports Dr. Brown's conclusion.

AMOS, JEFFRIES & ROBINSON, L.L.P.

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April 14, 2000

Mr. Vance L. Broemel
Consumer Advocate Division
Office of the Attorney General
Cordell Hull Building
425 5th Avenue North
Nashville, TN 37243-0485

RECEIVED

APR 17 2000

STATE ATTORNEY GENERAL
CONSUMER ADVOCATE DIVISION

Re: Docket No. 99-00994

Dear Vance:

I am enclosing for filing two copies of the following responses to the Consumer Advocate's Data Requests: 119, 120, 121, and 122.

Responses to the remaining Consumer Advocate Data Requests will be provided as soon as possible.

Sincerely,

Gerry W. Amos
Jerry W. Amos *by BRM*

JWA:lh
Encl.

NASHVILLE GAS COMPANY
DOCKET NO. 99-00994
CONSUMER ADVOCATE DATA REQUEST # 1

122. Prevailing interest rates for "A" rated debt from Nov. 1997 through in Jan. 1999, according to the Federal Reserve and other sources, ranged from a low of 6.91% to 7.26%. Explain why the company issued its new debt in Sept. 1999 instead of the time period of Nov. 1997 through Apr. 1999.

Response:

The Company forecasts construction and operating expenditures for the purpose of anticipating both short term and long term capital requirements. During the time period November 1997 through April 1999, capital requirements were met by internally generated funds and short term bank loans with rates more favorable than prevailing long term debt rates.

NASHVILLE GAS COMPANY
DOCKET NO. 99-00994
CONSUMER ADVOCATE DATA REQUEST # 1

86. Regarding the notes in accounts 22412, 22413 and 22414, provide copies of any written material indicating when the company informed the Tennessee Regulatory Authority of the company's intent to retire the notes, or the company's actual retirement of the notes.

Response:

The Company is unaware of any requirement to inform the Tennessee Regulatory Authority of its intent to retire or the actual retirement of debt securities. As provided in response to Item 87, the TRA approved the Company's request to issue \$150 million in debt securities in Docket No. 97-01047. The instruments under which the debt was issued were approved by the TRA (or its predecessor). These instruments authorize and/or require Piedmont to call or retire debt.